SPECIAL PROVISIONS
&
SUPPLEMENTAL SPECIFICATIONS

CSI-Inch/Pound

Project No:	**SP-0089(63)310**
Name:	**SR-89 AT 300 WEST, LEHI**
	SAFETY/TRAFFIC OPERATIONS
County:	**UTAH**
Bid Opening:	**July 27, 2004**
	Date

UDOT
GOING THE EXTRA MILE

2002 - U.S. Standard Units (Inch-Pound Units) February 2, 2004

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Project # SP-0089(63)310

9. 02813S: Landscape Reconstruction

10. 02892M Traffic Signal

11. 02969S: Optional Use of Reclaimed Asphalt Pavement

I. 2002 Standard Specifications

The State of Utah Standard Specifications for Road and Bridge Construction, U.S. Standard Units (Inch Pound Units) CSI Format, Edition of 2002 with Changes One and Two included applies on this project as a static Specification Book as well as all other applicable specification changes.

Refer to Part II (List of Revised Standard Specifications) and Part X (Special Provisions) for other project specific specifications.

II. List of Revised Standard Specifications

Change One – Included in 2002 Standard Specifications

Revised August 29, 2002

Section 00570 Articles 1.2 A 69, A 71 b (deleted)
Section 00727 Articles 1.1 D; 1.5 B; 1.9; 1.10; 1.16 B, C; 1.18 B
Section 01574 Articles 1.2 B
Section 02721 Articles 1.2 D (added), H (replaced), I (deleted);1.6 B1; 2.1 A Table 3; 3.2 C
Section 02741 Articles 3.8 E 2 a, b
Section 02821 Articles 3.1 A
Section 02892 Articles 1.5 A, B
Section 02936 Articles 1.4; 1.5 C
Section 03152 Articles 1.2 P, Q; 2.2 A, B
Section 05120 Articles 1.4 A (deleted), 3.3 A
Section 16525 Articles 1.6 A, B

Change Two – Included in 2002 Standard Specifications

Revised December 19, 2002

Section 01561 Article 3.1 A
Section 02075 Article 2.7 A
Section 02372 Article 2.1 A 4
Section 02455 Article 3.3 B 2
Section 02785 Article 3.2 C
Section 02861 Article 3.3 A
Section 03055 Articles 1.2 P (inserted), 2.3 B, 2.4 (deleted), 2.7 A 1 a-e (added), 2.7 B 2 (added), 2.8 A 1 a, 2.8 A 2 (deleted), 2.9 A3, 3.2 A Table, 3.2 C, 3.7 A 3, 3.8 C 1, 3.9 A-B, 3.10, 3.11 B 1, 3.11 B 3
Section 07922 Article 2.1 Table 1

Change Three

Revised February 27, 2003

Section 01355 Article 1.3 A 3
Section 01721 1.4 C deleted and moved to Measurement and Payment document
Section 02222 Changed title from Site Demolition-Pavement to Site Demolition - Concrete, A, 3.2 Title, 3.2 A
Section 02224 New Specification
Section 02316 1.2 A, D, I added, 1.3 added, 1.7 B, C, D, E, F, G added, 3.9 A added
Section 02455 3.3 B 2 (corrected error from change two)
Section 02721 1.2 Related Sections added, 1.3 H and I added, 1.7 B, 1.7 F deleted, 2.1 B added, 2.2 deleted, 3.1 Title changed, 3.2 B reference added, 3.2 E added
Section 02741 1.4 C6a added, 1.4 H, Table 3, 2.4 A, 2.4 C, Table 9, 2.5 B 1-3, 2.5 B 4 added, 2.5 D, 3.1 Al deleted, 3.2 C3 added, 3.7 D1, 3.9 B4, 3.9 B5 added, 3.9 E note added
Section 02744 Entire Section deleted
Section 02745 1.4 A9
Section 02785 1.2 C and D added
Section 02892 Added Articles, 1.3 N, O, Y, 1.5 D, 2.4 I, 2.5 C, D, E, 2.6 B3 - B6, 2.6 C, 2.16, 2.17, 3.11 and Revised Articles 3.5 F and Table Number, 3.5 G and Table Number
Section 02896 2.1 A, B and 3.1 A drawing number corrected
Section 16525 1.2 H

Change Four

Revised April 24, 2003

Section 00555 1.18 added Table 1
Section 01280 1.2 K
Section 01282 1.13 B added, 1.13 G 2 deleted
Section 02222 1.2 B Title Changed
Section 02231 3.5 A
Section 02705 Title Changed, 1.1 A, 1.3 added, 3.1 Title changed, 3.1 A, 3.1 D moved, 3.2 added
Section 02741 3.7 B
Section 02747 Entire Section deleted
Section 02752 1.8 E 1
Section 02753 3.1 D 5 a, 3.3 D
Section 02842 2.4A
Section 02861 2.1 I
Section 02911 3.2 A 1
Section 02931 3.2 B
Section 03392 2.1 A 8-9
Section 03921 2.1 A 1, 2.1 C
Section 03922 2.1 B 1-2
Section 03923 2.1 A-B, 3.1 B
Section 03924 2.2 A-B

Section 03935 2.1 A, 2.1 A 2
Section 07105 2.3 A
Section 13553 1.2 C Title Changed
Section 13554 1.1 A, 1.3 C and D added, 2.1 A, 2.1 F, 2.2 D 1, 2.2 D 2 deleted, 2.2 E, 2.2 H, 2.2 H 2, 2.2 H 3 deleted and renumbered, 3.1 B 3 added, 3.1 I

Change Five

Revised June 26, 2003

Section 00727 1.5 B – Measurement and Payment added
Section 01452 Parts 1 and 3 replaced
Section 01721 3.3 A, 3.15 added
Section 02741 1.2 A
Section 02752 1.2 B, 1.9 added, 3.13 deleted
Section 02786 1.2 B, 1.4 D 1
Section 02962 Entire Section Replaced

Change Six

Revised August 28, 2003

Section 01455 1.6 H
Section 01571 1.1 B, 1.2 B and F added, 3.1 B revised, 3.1 D deleted and E renumbered to D, 3.2 A 1 and 2 deleted, 3.2 B added, 3.3 added, 3.4 added, 3.5 added
Section 01574 1.5 A, 3.3 A
Section 02316 1.1 D added, 1.7 B, C, C.3, and D
Section 02896 3.1 A 5 added, 3.3 C 3 and 4
Section 03211 3.3 F 1
Section 09972 1.5, 2.1 A, 3.1 A, 3.2 A 1 b and d, 3.2 B 3 and 5, 3.4 E, G, H
Section 09991 1.1 A, 1.3 added, 1.4, 1.6 B 2 c added, 2.2 A, 3.1 I
Section 09992 1.4 A, 1.5, 1.7 B 2 c, 2.2 A

Change Seven

Revised October 30, 2003

Section 00120 1.1 all, 1.2 A, B, 1.3 A, 1.4 all, 1.5 A, 1.6 A, 1.7 B, C, D, H, 1.8 A, B, D, E deleted and remaining re-lettered, E, H, 1.9 A, 1.10 all, 1.11 all, 1.12 all, 1.14 A, 1.16 F, 1.20 E
Section 00515 1.2 A, C 1, C 4, 1.3 D, 1.5 A, 1.6 A, B, E deleted and remaining re-lettered, G 2, 1.7 A, A 1
Section 01452 1.4 B 1
Section 02075 2.4 A, 2.5 A
Section 02330 3.3 K
Section 09992 2.2 B
Section 13592 Revised entirely

State-Red Book with Full Size Plan Sheets

Change Eight

Revised December 18, 2003

Section 01721 1.1 A, 1.2, 1.4, 1.5 E, 1.6 A, 3.4 B, 3.5 C and D, 3.6, 3.14 added, 3.15
Section 16525 1.2 A deleted, 1.6 A, 2.6 A, 2.6 F 1, 2.7 A, 2.7 B, 2.14 C, 2.16 A, 2.16 B, 2.17 B 2, 3.2 A, 3.9 A, 3.11 A

III. List of Revised Standard Drawings

Change One

Revised December 19, 2002

AT 7	Polymer Concrete Junction Box Details	12/19/2002
BA 1A	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 1B	Precast Concrete Full Barrier Standard Section	12/19/2002
BA 3	Cast In Place Constant Slope Barrier	12/19/2002
BA 4B	Beam Guardrail Installations	12/19/2002
BA 4C	Beam Guardrail Anchor Type I	12/19/2002
CC 6	Crash Cushion Type E Sand Barrel Details	12/19/2002
DG 3	Maximum Fill Height and End Sections for HDPE And PVC Pipes	12/19/2002
DG 4	Pipe Culverts Minimum Cover	12/19/2002
EN 4	Temporary Erosion Control (Drop-Inlet Barriers)	12/19/2002
GW 1	Raised Median and Plowable End Section	12/19/2002
PV 2	Pavement Approach Slab Details	12/19/2002
SL 13	Traffic Counting Loop Detector Details	12/19/2002
SN 2	Flashing School Sign	12/19/2002
SN 4	Flashing Stop Sign	12/19/2002
SN 5	Typical Installation For Milepost Signs	12/19/2002
SN 8	Ground Mounted Timber Sign Post (P1)	12/19/2002
ST 1	Object Marker “T” Intersection and Pavement Transition Guidance	12/19/2002
ST 7	Pavement Markings and Signs at Railroad Crossings	12/19/2002
SW 3A	Precast Concrete Noise Wall 1 of 2	12/19/2002
SW 3B	Precast Concrete Noise Wall 2 of 2	12/19/2002
SW 4A	Precast Concrete Retaining/Noise Wall 1 of 2	12/19/2002

Change Two

Revised February 27, 2003

GW 2	Concrete Curb and Gutter	02/27/2003
GW 5	Pedestrian Access	02/27/2003

Change Three

Revised April 24, 2003

AT 7	Polymer-Concrete Junction Box Details	04/24/2003
CB 2	Curb Inlet Catch Basin	04/24/2003
CC 7	Grading & Installation Details Crash Cushion Type F	04/24/2003
CC 8	Grading & Installation Details Crash Cushion Type G	04/24/2003
CC 9A	Grading & Installation Details Crash Cushion Type H	04/24/2003 (New)
CC 9B	Grading & Installation Details Crash Cushion Type H	04/24/2003 (New)
EN 2	Temporary Erosion Control (Silt Fence)	04/24/2003
GW 2	Concrete Curb and Gutter	04/24/2003
SN 12B	Ground Mounted Sign Installation Details	04/24/2003

Change Four

Revised June 26, 2003

DD 1	Superelevation and Widening	06/26/2003
DD 3	Climbing Lanes	06/26/2003
DD 8	Structural Geometric Design Standards Clearances	06/26/2003
DD 9	Structural Geometric Design Standards	06/26/2003
DD 10	Railroad Clearances At Highway Overpass Structures	06/26/2003
DD 11	Rural Multi Lane Highways Other Than Freeways	06/26/2003
DD 12	Rural Two Lane Highways	06/26/2003
DD 13	Frontage and Access Roads (Under 50 ADT)	06/26/2003
GW 2	Concrete Curb & Gutter	06/26/2003

Change Five

Revised August 28, 2003

DD 2	Slope Rounding, Benched Slope, and Cut Ditch Details	08/28/03 (New)
DD 4	Geometric Design for Freeways (Roadway)	08/28/03 (New)
DD 5	Entrance and Exit Ramps At Crossroads	08/28/03 (New)
DD 6	Entrance and Exit Ramp Geometrics	08/28/03 (New)
DD 7	Freeway Crossover	08/28/03 (New)
DD 14	Typical Rural 2 Lane Road With Median Lane and Deceleration Lane For Intersecting Crossroads	08/28/03 (New)
GW 9	Delineation Hardware	08/28/03
GW 10	Delineation Application	08/28/03
GW 11	Sidewalks and Shoulders On Urban Roadways	08/28/03 (New)
ST 2	Freeway Crossover Markings	08/28/03
ST 9	School Crossing and School Message	08/28/03 (New)

Change Six

Revised October 30, 2003

AT 15	RWIS Site and Foundation Details	10/30/03 (New)
AT 16	RPU Tower Base and Service Pad Layout	10/30/03 (New)
AT 17	Ground Rod Installation and Tower Grounding	10/30/03 (New)
SN 2	School Speed Limit Assembly	10/30/03
SN 3	Overhead School Speed Limit Assembly	10/30/03

Change Seven

Revised December 18, 2003

DD 2	Surface Ditch, Benched Slope, and Cut Ditch Details	12/18/03
DD 4	Geometric Design For Freeways (Roadway)	12/18/03
DD 11	Rural Multi Lane Highways Other Than Freeways	12/18/03
DD 12	Rural Two Lane Highways	12/18/03
DD 13	Frontage and Access Roads (Under 50 ADT)	12/18/03
SL 1A	Traffic Signal Mast Arm Pole and Luminaire Extension	12/18/03
SL 1B	Traffic Signal Mast Arm Pole and Luminaire Extension	12/18/03
SL 2	Traffic Signal Mast Arm Detail 30’ Thru 75’	12/18/03
SL 3	Underground Service Pedestal Detail	12/18/03
SL 4	Traffic Signal Mast Arm Pole Foundation	12/18/03
SL 5	Traffic Signal Pole	12/18/03
SL 6	Pole Mounted Power Source Details	12/18/03
SL 7	Span Wire Signal Pole Detail	12/18/03
SL 8	Signal Head Details	12/18/03
SL 9	Pedestrian Signal Assembly	12/18/03
SL 10	Traffic Signal Controller Base Detail	12/18/03
SL 11	Traffic Signal Loop Detector Detail	12/18/03
SL 12	Traffic Counting Loop Detector Detail	12/18/03
SL 13	Drawing Deleted - Will be added in future	
SL 14	Highway Luminaire Pole Ground Mount	12/18/03
SL 15	Luminaire Slip Base Detail	12/18/03
SL 16	Highway Luminaire Pole Barrier Mount	12/18/03
SL 17	Highway Luminaire Pole Foundation Extension	12/18/03
SL 18	Single Transformer Substation Details	12/18/03

IV. Materials Minimum Sampling and Testing

Follow the requirements of the Current Materials Minimum Sampling and Testing Manual:

Materials Minimum Sampling and Testing Manual reference can be found from the UDOT Web Site at:
http://www.udot.utah.gov/index.php/m=c/tid=642

NOTICE TO CONTRACTORS

Sealed proposals will be received by the Utah Department of Transportation UDOT/DPS Building (4th Floor), 4501 South 2700 West, Salt Lake City, Utah. 84114-8220, until 2 o'clock p.m. Tuesday, July 27, 2004, and at that time the download process of bids from the USERTrust Vault to UDOT will begin, with the public opening of bids scheduled at 2:30 for SAFETY/TRAFFIC OPERATIONS of SR-89 AT 300 WEST, LEHI in UTAH County, the same being identified as State Project No: SP-0089(63)310.

Federal Regulations:
Wage Rate Non-Applicable.

Project Location:

The principal items of work are as follows (for all items of work see attachment):
Traffic Signal Syst SR-89 300 WEST
18 inch Reinforced Concrete Pipe Culvert, Class B
HMA - 3/4 inch

The project is to be completed: in 30 Working Days.

Other Requirements:
All project bidding information, including Specifications and Plans, can be viewed, downloaded, and printed from UDOT's Project Development Construction Bid Opening Information website, http://www.udot.utah.gov/index.php/m=c/tid=319. To bid on UDOT projects, bidders must use UDOT's Electronic Bid System (EBS). The EBS software and EBS training schedules are also available on this website.

Project information can also be reviewed at the main office in Salt Lake City, its Region offices, and its District offices in Price, Richfield, and Cedar City.

Project Plans cannot be downloaded or printed from the website unless your company is registered with UDOT. Go to UDOT's website to register. Unregistered companies may obtain a **CD**, that contains the Specifications and Plans, from the main office, 4501 South 2700 West, Salt Lake City, (801) 965-4346, for a fee of $20.00, plus tax and mail charge, if applicable, none of which will be refunded.

As required, a contractor's license must be obtained from the Utah Department of Commerce.

Each bidder must submit an electronic bid bond from an approved surety company using UDOT's Electronic Bid System (EBS); or in lieu thereof, cash, certified check, or cashier's check for not less than 5% of the total amount of the bid, made payable to the Utah Department of Transportation, showing evidence of good faith and a guarantee that if awarded the contract, the bidder will execute the contract and furnish the contract bonds as required.

The right to reject any or all bids is reserved.

If you need an accommodation under the Americans with Disabilities Act, contact the Construction Division at (801) 965-4346. Please allow three working days.

Additional information may be secured at the office of the Utah Department of Transportation, (801) 965-4346.

Dated this 03rd day of July, 2004.

UTAH DEPARTMENT OF TRANSPORTATION
John R. Njord, Director

Revised Date:

State-Red Book with Full Size Plan Sheets

VI. EQUAL OPPORTUNITY (STATE PROJECTS)

Selection of Subcontractors, Service Providers, Procurement of Materials and Leasing of Equipment:

Do not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

Notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

Disadvantaged business enterprises (DBE), as defined in 49 CFR 23, have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. Use best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Obtain lists of DBE construction firms from SHA personnel.

Use best efforts to ensure subcontractor compliance with their EEO obligations.

Selection of Labor:

During the performance of this contract, do not discriminate against labor from any other State, possession, or territory of the United States.

Employment Practices:

During the performance of this contract, the Contractor agrees as follows:

Do not discriminate against any employee or applicant for employment because of race, religion, sex, color, national origin, age, or disability. Take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, religion, sex, color, national origin, age, or disability. Such action includes, but is not be limited to the following: employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoffs or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Agree to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the State Department of Transportation setting forth the provisions of this nondiscrimination clause.

In all solicitations or advertisements for employees state that all qualified applicants receive consideration for employment without regard to race, religion, sex, color, national origin, age, or disability.

Send to each labor union or representative of workers that the Contractor has a collective bargaining agreement or other contract or understanding, a notice to be provided by the State Department of Transportation advising the said labor union or worker' representative of the commitments under this section and post copies of the notice in conspicuous places available to employees and applicants for employment.

In the event of noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations or orders, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further State contracts.

Include the provisions of this Section in every subcontract or purchase order so that such provision will be binding upon each Subcontractor or vendor. Take such action with respect to any subcontract or purchase order as the State Department of Transportation may direct as a means of enforcing such provisions including sanctions for noncompliance.

Utah Department of Transportation
Bidder's Schedule

Bid Opening Date: 7/27/2004
Region: REGION 3
Project Number: SP-0089(63)310
County: UTAH
Project Name: SR-89 AT 300 WEST, LEHI
Concept: SAFETY/TRAFFIC OPERATIONS
Funding: STATE
Bid Items Version#: 1

#	Item	Description	Quantity	Unit
10 - ROADWAY				
1	012850010	Mobilization	1	lump sum
2	013150010	Public Information Services	1	lump sum
3	015540005	Traffic Control	1	lump sum
4	017210010	Survey	1	lump sum
5	018920030	Reconstruct Meter Box	1	each
6	01893000*	Loop Water Line	5	each
7	020560020	Granular Borrow	500	ton
8	022210050	Remove Tree	1	each
9	022210080	Remove Fence	144	foot
10	022220005	Remove Concrete Sidewalk	50	square yard
11	022220010	Remove Concrete Driveway	80	square yard
12	022220020	Remove Concrete Curb and Gutter	55	foot
13	023160020	Roadway Excavation (Plan Quantity)	425	cubic yard
14	026100412	18 inch Reinforced Concrete Pipe Culvert, Class B	820	foot
15	026130030	Culvert End Section 18 inch	1	each
16	026350040	Rectangular Grate And Frame (Bicycle Safe Grating) Std Dwg GF 3	8	each
17	027210070	Untreated Base Course 3/4 inch or 1 inch Max	350	ton
18	027410060	HMA - 3/4 inch	240	ton
19	027650020	Pavement Message Paint	84	each
20	027650030	Remove Pavement Markings	1150	foot
21	027650050	Pavement Marking Paint	10	gallon
22	027710025	Concrete Curb and Gutter Type B1	220	foot
23	027710045	Concrete Driveway Flared, 7 inch Thick	570	square foot
24	027710080	Pedestrian Access Ramp Type E	700	square foot
25	02771020*	Concrete Curb & Gutter Type A	170	foot
26	02771030*	Concrete Curb and Gutter Transition	25	foot
27	027760010	Concrete Sidewalk	1750	square foot
28	02813000*	Landscape Reconstruction	1	lump sum
29	028210014	4 ft Chain Link Fence, Type II	75	foot
30	028210018	6 ft Chain Link Fence, Type II	32	foot
31	028910005	Remove Sign	3	each
32	028910010	Relocate Sign	2	each
33	028910132	Sign Type P-1	15	square foot
34	028910170	Sign Type P-1, 30 inch X 30 inch	4	each
35	028910175	Sign Type P-1, 36 inch X 36 inch	1	each
36	028910180	Sign Type P-1, 48 inch X 48 inch	2	each
37	032110010	Reinforcing Steel - Coated	1650	pound
38	033100020	Concrete- Small Structure	13	cubic yard
50 - SIGNALS				
39	02892001D	Traffic Signal Syst SR-89 300 WEST	1	lump sum

Note: Item numbers ending with "" or "P" identify a change to the Standard Specification, Supplemental Specifications or Measurement and payment. Read all related documents carefully.

Utah Department of Transportation
Bidder's Schedule

Bid Opening Date: 7/27/2004
Region: REGION 3
Project Number: SP-0089(63)310
County: UTAH
Project Name: SR-89 AT 300 WEST, LEHI
Concept: SAFETY/TRAFFIC OPERATIONS
Funding: STATE
Bid Items Version#: 1

#	Item	Description	Quantity	Unit
50 - SIGNALS				
40	028920020	Installation of State Furnished Material	1	lump sum
41	02892030*	Installation of Priority Control System	1	lump sum

Note: Item numbers ending with "" or "P" identify a change to the Standard Specification, Supplemental Specifications or Measurement and payment. Read all related documents carefully.

MEASUREMENT AND PAYMENT

Project No. SP-0089(63)310

The Department will measure and pay for each bid item as detailed in this section. Payment is contingent upon acceptance by the Department.

Items are listed by Specification and in tables as follows:

Item #	Bid item number	Bid Item Name	Unit of measurement and payment
Additional information goes here.			

1	**012850010**	**Mobilization**	**Lump sum**
	Payment	**Amount Paid**	**When Paid**
	First	The lesser of 25% of Mobilization or 2.5% of contract	With first estimate
	Second	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 5% of contract
	Third	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 10% of contract
	Fourth	The lesser of 25% of Mobilization or 2.5% of contract	With estimate following completion of 20% of contract
	Final	Amount bid in excess of 10% of contract price.	Project Acceptance-Final

2	**013150010**	**Public Information Services**	**Lump Sum**
	Payment	**Amount Paid**	**When Paid**
	One	25% of bid item amount	With first estimate
		Remaining portion of bid item paid as a percentage of the contract completed	With each estimate

3	**015540005**	**Traffic Control**	**Lump Sum**
	Payment	**Amount Paid**	**When Paid**
	One	25% of the bid item amount	With first estimate
		Remaining portion of bid item paid as a percentage of the contract completed	With each estimate

4	**017210010**	**Survey (Specialty Item)**	**Lump sum**
	Payment	**Amount Paid**	**When Paid**
	First	25% of the bid item amount	When the project is 5% complete
	Second	A total of 40% of bid item amount	When the project is 10% complete
	Third	A total of 75% of bid item amount	When the project is 50% complete
	Fourth	A total or 90% of bid item amount	When the project is 75% complete
	Fifth	The Department retains the remaining 10% of bid item amount until the projected completion and all surveying and design data "as staked/constructed" drawings in Microstation format clearly showing all final dimensions, lines, grades, tie-ins, and elevations from contract plans are returned to the Engineer.	

5	**018920030**	**Reconstruct Meter Box**	**Each**
1. Payment includes costs of materials, necessary excavation, and reconstruction of meter box, as per specifications. 2. Includes removal and disposal of excess or waste materials.			

6	**01893000***	**Loop Water Line**	**Each**
Includes costs of all activities required to access and loop water lines, and restore area to previously existing conditions. This includes, but is not limited to: 1. Excavation. 2. Materials, fittings, pipe, etc. necessary for water line loop. 3. Installation of loop, including coordinating with appropriate agency governing water line(s). 4. Testing of water line loop as per requirements of agency governing water line. 5. Backfilling,and compaction of excavated areas. 6. Granular Borrow, UTBC, and HMA will be paid for separately, as part of each individual bid item. 7. Complete restoration of disturbed areas to pre-construction conditions. 8. Removal and disposal of all excess or waste materials.			

7	**020560020**	**Granular Borrow**	**Ton**
Refer to Section 01280 "Measurement."			

8	**022210050**	**Remove Tree**	**Each**
Removed, refer to Standard Specification 02221, PART 3, paragraph: Tree Removal.			

9	022210080	Remove Fence	Feet
1. Measurement will be based upon feet of fence removed, measured from end post to end post of existing fence. 2. Payment includes removal and disposal of fence, posts, foundations, access facilities, etc. 3. Includes any excavation necessary to remove fence. 4. Includes filling of post holes with borrow material, and compaction of fill. 5. Includes restoration of area to previously existing condition.			

10	022220005	Remove Concrete Sidewalk	Square yard
1. Area of steps will be based on the area of the horizontal projection. 2. Payment includes all sawcutting necessary to remove sidewalk. 3. Includes removal and disposal of concrete sidewalk and other excess materials.			

11	022220010	Remove Concrete Driveway	Square yard
1. Payment includes all sawcutting necessary to remove concrete curb and gutter. 2. Includes removal and disposal of concrete and any other excess materials.			

12	022220020	Remove Concrete Curb and Gutter	Feet
1. Payment includes all sawcutting necessary to remove concrete curb and gutter. 2. Includes removal and disposal of concrete and any other excess materials.			

13	023160020	Roadway Excavation (Plan Quantity)	Cubic yard
1. Includes all necessary roadway and parking lot excavation, including asphalt removal. 2. Payment includes all necessary asphalt and concrete sawcutting not included elsewhere, as per plans. 3. Includes any necessary clearing and grubbing needed on project, per specifications. 3. Includes removal and disposal of all excess and waste material.			

14	026100412	18 inch Reinforced Concrete Pipe Culvert, Class B	Feet
1. Measured parallel to the pipe center line from barrel end to barrel end, in place. 2. Includes costs of sawcutting existing pavement as necessary for trench excavation. 3. Includes costs of excavation and backfill. 4. Includes costs of materials and installation of bedding material, pipes, gaskets, and any necessary grouting. 5. Does not include costs for granular fill material, untreated base course, and HMA installed as part of the road section. Each of these items will be paid for separately. 6. Includes costs of removal and disposal of excess material, and restoration of area to pre-construction conditions.			

15	026130030	Culvert End Section 18 inch	Each
In place			

16	026350040	Rectangular Grate and Frame, (Bicycle Safe Grating), Std Dwg GF 3	Each
In place			

17	027210070	Untreated Base Course 3/4 inch or 1 inch Max	Ton
1. Payment includes materials and installation of Untreated Base Course as per plans and specifications. 2. Includes costs of compaction as per specifications. 3. Includes all Untreated Base Course required on the project, including patching of drain line trench. 4. Payment includes removal and disposal of all excess or waste material.			

18	027410060	HMA - 3/4 inch	Ton
1. Includes aggregates, asphalt binder, hydrated lime, other additives, etc. The Department will not pay separately for asphalt binder, hydrated lime, additives, etc. 2. Includes all HMA required on project, including drain line trench patching and paved areas behind curbs.			

19	027650020	Pavement Message Paint	Each
In place, measurement - Painted Pavement Messages: A. Letter = one message. B. Arrow = one message. C. Multi-headed arrow = one message per arrow. D. School crossbars = one message per 24 inch x 10 ft bar. E. Crosswalk = two message per lane and two messages per shoulder. F. Stop Bar = one message per lane and one message per shoulder. G. Railroad crossing markings = seven messages per lane. 1. 'R' = one message each (two required). 2. 'X' = two messages. 3. Transverse Bar = one message each (two required). 4. Stop Bar = one message. **Payment:** A. The Department will not pay for removal of unauthorized, smeared, or damaged markings.			

20	027650030	Remove Pavement Markings	Feet
Measurement for removing pavement markings: Measure per foot each line removed.			

21	027650050	Pavement Marking Paint	Gallon
In place, Payment: A. The Department will not pay for removal of unauthorized, smeared, or damaged markings.			

22	027710025	Concrete Curb and Gutter Type B1	Feet

Measured along the roadway face. Include excavation if Roadway Excavation is not a bid item.

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

Psi below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

23	027710045	Concrete Driveway Flared, 7 inch Thick	Square Feet

Include Radius and Flares.

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

Psi below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

24	027710080	Pedestrian Access Ramp Type E	Square Feet

In place

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

Psi below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

25	02771020*	Concrete Curb & Gutter Type A	Feet

Measured along the roadway face. Include excavation if Roadway Excavation is not a bid item.

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

Psi below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

26	02771030*	Concrete Curb and Gutter Transition	Feet

Measured along the roadway face. Include excavation if Roadway Excavation is not a bid item.

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

Psi below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

27	027760010	Concrete Sidewalk	Square feet

In place, include excavation if Roadway Excavation is not a bid item.

Price Adjustments for Strength

A. When concrete is below specified strength:

1. Department may accept item at a reduced price
2. The pay factor will be applied to the portion of the item that is represented by the strength tests that fall below specified strength.
3. Department will calculate the pay factor as follows:

Psi below specified strength:	Pay Factor:
1 - 100	0.98
101 - 200	0.94
201 - 300	0.88
301 - 400	0.80
More than 400	0.50 or Engineer may reject

28	02813000*	Landscape Reconstruction	Lump sum
1. Includes restoration of sod, topsoil, irrigation, and all landscaping features disturbed in the project limits. 2. Includes temporary reconstruction of irrigation system as per specifications. 3. Includes removal and disposal of waste and excess materials.			

29	028210014	4 ft Chain Link Fence, Type II	Feet
1. In place. 2. Measured parallel to the ground along the fence including line posts, less openings. 3. Includes cost of materials and installation of brace posts.			

30	028210018	6 ft Chain Link Fence, Type II	Feet
1. In place. 2. Measured parallel to the ground along the fence including line posts, less openings. 3. Includes cost of materials and installation of brace posts.			

31	028910005	Remove Sign	Each
1. Includes removal and disposal of sign(s), signpost(s), and any items attached to sign or post. 2. Includes removal and disposal of sign foundation. 3. Includes backfill and compaction of borrow material required to fill in hole left by foundation removal.			

32	028910010	Relocate Sign	Each
In place, includes removal and disposal of existing concrete sign base.			

33	028910132	Sign Type P-1	Square feet
In place			

34	028910170	Sign Type P-1, 30 inch X 30 inch	Each
In place			

35	028910175	Sign Type P-1, 36 inch X 36 inch	Each
In place			

36	028910180	Sign Type P-1, 48 inch x 48 inch	Each
In place			

37	032110010	Reinforcing Steel - Coated	Pound

Measurement: Per plan quantity.

1. Do not include the mass of the coating or the specified test bars as computed weight.
2. Department will not make allowances for extra reinforcing steel required to provide lap splices that are requested by the Contractor.
3. Department will not make allowances for clips, chairs, wire, or other materials used for fastening reinforcement in place.

38	033100020	Concrete - Small Structure	Cubic Yard

Measurement:

A. When the contract provides measurement per cubic yard, measure quantities by the dimensions shown.
B. Use the prismoidal formula when the method of average end areas is not sufficiently accurate.
C. Do not measure concrete required to fill over breakage of excavation for footings, walls, or slabs.
D. Department will not deduct for volume occupied by pipes (other than culverts), reinforcing steel, piles, metal grillage, anchors, conduits, or weep holes.

Payment:

A. Department will pay for reinforcing steel for structures separately, unless otherwise noted.
B. Department will pay separately for concrete placed in individual structures containing less than 8 yd^3 at the bid price per cubic yard for Concrete, Small Structure.
C. Payment includes materials and installation of manhole steps, where required.
D. Department will make no separate payment for excavation for structures.

39	02892001D	Traffic Signal Syst SR-89 300 WEST	Lump sum

Includes all materials and workmanship to provide a complete and fully operational signal system, including power source and railroad blank-out signs.

40	028920020	Installation of State Furnished Material	Lump Sum

Includes complete installation of all State Furnished Material, including signal and lighting systems.

41	02892030*	Installation of Priority Control System	Lump Sum

1. Includes installation of Lehi City-furnished Priority Control Units, as per the following:
   a. Include all materials and workmanship to install city-furnished material per plan details and manufacturer's installation instructions.
   b. Includes materials and installation of 4 conductor, no. 14 wire.
   c. Includes costs to transport city furnished materials to the project site.
   d. Includes any other costs of material or installation to provide a complete and fully operational Priority Control system in conjunction with the traffic signal system.
   e. Price Adjustments: Contractor is responsible for any damage to city furnished material from the time of acceptance for transport to the actual incorporation into the finished work.

Summary Report

Project: SP-0089(63)310 **Version: 1**

SR-89 AT 300 WEST, LEHI

Detail	Alt Group	Alt #	Description
10 - ROADWAY	0	0	

Item Number	Description	Qty	Unit
012850010	Mobilization	1	Lump
013150010	Public Information Services	1	Lump
015540005	Traffic Control	1	Lump
017210010	Survey	1	Lump
018920030	Reconstruct Meter Box	1	Each
01893000*	Loop Water Line	5	Each
020560020	Granular Borrow	500	Ton
022210050	Remove Tree	1	Each
022210080	Remove Fence	144	ft
022220005	Remove Concrete Sidewalk	50	sq yd
022220010	Remove Concrete Driveway	80	sq yd
022220020	Remove Concrete Curb and Gutter	55	ft
023160020	Roadway Excavation (Plan Quantity)	425	cu yd
026100412	18 inch Reinforced Concrete Pipe Culvert, Class B	820	ft
026130030	Culvert End Section 18 inch	1	Each
026350040	Rectangular Grate And Frame (Bicycle Safe Grating) Std Dwg GF 3	8	Each
027210070	Untreated Base Course 3/4 inch or 1 inch Max	350	Ton
027410060	HMA - 3/4 inch	240	Ton
027650020	Pavement Message Paint	84	Each
027650030	Remove Pavement Markings	1,150	ft
027650050	Pavement Marking Paint	10	gal
027710025	Concrete Curb and Gutter Type B1	220	ft
027710045	Concrete Driveway Flared, 7 inch Thick	570	sq ft
027710080	Pedestrian Access Ramp Type E	700	sq ft
02771020*	Concrete Curb & Gutter Type A	170	ft
02771030*	Concrete Curb and Gutter Transition	25	ft
027760010	Concrete Sidewalk	1,750	sq ft
02813000*	Landscape Reconstruction	1	Lump
028210014	4 ft Chain Link Fence, Type II	75	ft

Summary Report

Project: SP-0089(63)310 **Version: 1**

SR-89 AT 300 WEST, LEHI

Detail	Alt Group	Alt #	Description
10 - ROADWAY	0	0	

Item Number	Description	Qty	Unit
028210018	6 ft Chain Link Fence, Type II	32	ft
028910005	Remove Sign	3	Each
028910010	Relocate Sign	2	Each
028910132	Sign Type P-1	15	sq ft
028910170	Sign Type P-1, 30 inch X 30 inch	4	Each
028910175	Sign Type P-1, 36 inch X 36 inch	1	Each
028910180	Sign Type P-1, 48 inch X 48 inch	2	Each
032110010	Reinforcing Steel - Coated	1,650	lb
033100020	Concrete- Small Structure	13	cu yd

Detail	Alt Group	Alt #	Description
50 - SIGNALS	0	0	

Item Number	Description	Qty	Unit
02892001D	Traffic Signal Syst SR-89 300 WEST	1	Lump
028920020	Installation of State Furnished Material	1	Lump
02892030*	Installation of Priority Control System	1	Lump

Detailed Report

SP-0089(63)310 **Version: 1**

SR-89 AT 300 WEST, LEHI

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
018920030	**Reconstruct Meter Box**	1	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	16+15.0	41.0 LT			1.0	
					1.0	

Item Number	Description	Use Qty	Unit
01893000*	**Loop Water Line**	5	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+36.0	13.0 RT			1.0	4 INCH
300W	6+75.0	42.0 RT			1.0	6 INCH
300W	6+90.0	37.0 RT			1.0	4 INCH
300W	7+10.0	15.0 RT			1.0	4 INCH
300W	7+10.0	9.0 RT			1.0	8 INCH
					5.0	

Item Number	Description	Use Qty	Unit
020560020	**Granular Borrow**	500	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	4+94.9	83.2 RT	6+44.0	13.9 RT	39.27	
300W	5+50.0	35.0 RT	6+35.0	29.0 RT	18.9	cuts/fills for concrete, asphalt, & slopes
300W	5+91.6	80.0 LT	6+71.6	21.0 LT	29.68	
300W	6+10.0	78.5 LT	6+80.0	30.0 LT	18.9	cuts/fills for concrete work & backslope
300W	6+45.0	32.0 RT	6+52.0	56.0 RT	5.67	cuts/fills for concrete work & backslope
300W	6+52.9	18.3 RT	6+63.2	56.7 RT	17.57	
300W	6+75.0	9.2 LT	8+19.6	14.0 LT	73.898	
300W	6+82.0	104.2 RT	7+49.7	11.8 RT	50.12	
300W	6+91.5	30.0 LT	8+20.0	21.0 LT	120.96	cuts/fills for concrete work & backslope
SR-89	13+61.5	40.5 LT	15+45.3	36.5 LT	80.5	
SR-89	14+47.3	38.1 RT	14+72.8	48.4 RT	3.5	
SR-89	16+17.4	36.0 LT	16+29.3	36.0 LT	0.84	
SR-89	16+75.1	36.0 LT	17+04.1	36.0 LT	2.1	
					461.908	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
022210050	**Remove Tree**	1	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	14+57.0	50.0 RT			1.0	
					1.0	

022210080	**Remove Fence**	144	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+00.0	39.1 RT	6+03.0	31.9 RT	7.8	wire & concrete post fence
300W	6+03.0	31.9 RT	6+23.0	43.5 RT	23.121	wire & concrete post fence
300W	6+21.0	28.4 LT	6+51.0	43.6 LT	33.631	chain link
300W	6+92.0	53.9 RT	6+94.1	32.5 RT	21.503	chain link
300W	6+94.1	32.5 RT	7+03.1	21.9 RT	13.905	chain link
300W	7+03.1	21.9 RT	7+47.0	22.6 RT	43.906	chain link
					143.866	

022220005	**Remove Concrete Sidewalk**	50	sq yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	13+80.5	48.0 LT	14+20.2	48.0 LT	23.0	
SR-89	14+47.2	40.6 RT	14+70.4	51.0 RT	18.0	
SR-89	15+63.3	42.7 LT	15+75.1	42.7 LT	7.0	
					48.0	

022220010	**Remove Concrete Driveway**	80	sq yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	15+17.2	39.4 LT	15+66.8	39.2 LT	60.0	
SR-89	15+71.7	39.2 LT	15+75.1	39.5 LT	1.0	
SR-89	16+17.4	39.5 LT	16+20.6	39.3 LT	2.0	
SR-89	16+26.0	39.4 LT	16+29.3	39.5 LT	2.0	
SR-89	16+75.2	39.5 LT	16+83.7	39.7 LT	6.0	
SR-89	16+96.2	39.8 LT	17+04.2	39.5 LT	6.0	
					77.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
022220020	**Remove Concrete Curb and Gutter**	55	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	14+47.2	40.6 RT	14+70.4	51.0 RT	28.0	
SR-89	15+66.8	39.2 LT	15+71.4	39.2 LT	5.0	
SR-89	16+20.6	39.3 LT	16+26.0	39.4 LT	6.0	
SR-89	16+83.7	39.7 LT	16+96.2	39.8 LT	13.0	
					52.0	

Item Number	Description	Use Qty	Unit
023160020	**Roadway Excavation (Plan Quantity)**	425	cu yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	4+92.6	64.6 LT	4+68.0	56.4 LT	8.519	excavation for concrete work
300W	4+93.4	64.1 LT	4+71.1	47.4 LT	4.012	roadway section
300W	4+94.9	83.2 RT	6+44.0	13.9 RT	45.019	roadway section
300W	4+95.6	83.6 RT	5+50.0	35.0 RT	40.741	sidewalk, driveway, & asphalt
300W	5+50.0	35.0 RT	6+35.0	29.0 RT	21.0	cuts/fills for concrete, asphalt, & slopes
300W	5+91.6	80.0 LT	6+62.3	10.4 LT	34.025	roadway section
300W	6+08.1	76.7 LT	6+36.8	37.1 LT	22.222	asphalt parking lot - does not include fill slope
300W	6+10.0	78.5 LT	6+80.0	30.0 LT	44.0	cuts/fills for concrete work & backslope
300W	6+45.0	32.0 RT	6+52.0	56.0 RT	5.0	cuts/fills for concrete work & backslope
300W	6+52.9	18.3 RT	6+63.2	56.7 RT	20.142	roadway section
300W	6+75.0	9.2 LT	8+19.6	13.0 LT	84.741	roadway section
300W	6+82.0	104.2 RT	7+49.7	11.8 RT	57.457	roadway section
300W	6+86.0	52.5 RT	7+12.6	23.0 RT	7.407	excavation for concrete work
300W	6+91.5	30.0 LT	8+20.0	21.0 LT	2.0	cuts/fills for concrete work & backslope
SR-89	16+17.3	42.8 LT	16+29.3	42.9 LT	2.889	new driveway section
SR-89	16+17.4	36.0 LT	16+29.3	36.0 LT	0.963	roadway section
SR-89	16+75.1	36.0 LT	17+04.1	36.0 LT	2.407	roadway section
SR-89	16+75.2	43.1 LT	17+04.2	43.3 LT	7.037	curb/gutter, driveway, & asphalt island
					409.581	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit

026100412 **18 inch Reinforced Concrete Pipe Culvert, Class B** 820 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+59.3	43.8 RT	6+87.1	41.7 RT	28.0	
300W	6+87.1	41.7 RT	7+09.5	21.2 RT	31.0	
300W	7+09.5	21.2 RT	7+13.1	21.0 LT	43.0	
300W	7+13.1	21.0 LT	7+28.7	41.4 LT	26.0	
SR-89	11+49.9	45.8 LT	13+96.4	39.6 LT	247.0	
SR-89	13+96.4	39.6 LT	15+17.1	37.0 LT	121.0	
SR-89	15+17.1	37.0 LT	15+42.1	37.0 LT	25.0	
SR-89	8+63.1	52.9 LT	11+49.9	45.8 LT	287.0	
					808.0	

026130030 **Culvert End Section 18 inch** 1 Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	7+28.7	41.4 LT			1.0	
					1.0	

026350040 **Rectangular Grate And Frame (Bicycle Safe Grating) Std Dwg GF 3** 8 Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+59.3	43.8 RT			1.0	
300W	6+87.1	41.7 RT			1.0	
300W	7+09.5	21.2 RT			1.0	
300W	7+13.1	21.0 LT			1.0	
SR-89	11+49.9	45.8 LT			1.0	
SR-89	13+96.4	39.6 LT			1.0	
SR-89	15+17.1	37.0 LT			1.0	
SR-89	15+42.1	37.0 LT			1.0	
					8.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027210070	**Untreated Base Course 3/4 inch or 1 inch Max**	350	Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	4+94.9	83.2 RT	6+44.0	13.9 RT	26.928	
300W	5+23.7	38.6 RT	5+49.4	23.5 RT	1.8	curve section
300W	5+23.7	38.6 RT	5+59.4	23.0 RT	5.4	ave width incl. sidewalk transition
300W	5+25.9	52.0 RT	6+04.0	27.0 RT	19.872	
300W	5+49.4	23.5 RT	5+59.4	23.0 RT	0.406	
300W	5+59.4	23.0 RT	5+62.8	23.0 RT	0.122	
300W	5+59.4	23.0 RT	5+68.6	25.0 RT	0.72	ave. sidewalk length up to drway
300W	5+62.8	23.0 RT	6+25.2	23.0 RT	6.84	includes driveway lead-in to RR shed
300W	5+88.5	69.7 LT	6+19.1	23.5 LT	3.375	curve section
300W	5+88.5	69.7 LT	6+19.1	23.5 LT	7.2	ave width incl. sidewalk transition
300W	5+91.6	80.0 LT	6+71.6	21.0 LT	20.352	
300W	5+95.6	78.2 LT	5+88.5	69.7 LT	0.45	
300W	6+04.1	81.2 LT	5+88.5	69.7 LT	2.25	ave width incl. sidewalk transition
300W	6+08.1	76.7 LT	6+36.8	37.1 LT	25.624	
300W	6+14.7	27.0 RT	6+38.1	23.0 RT	3.78	
300W	6+19.1	23.5 LT	6+30.0	23.0 LT	0.982	transition to 4' width
300W	6+19.1	23.5 LT	6+30.0	23.0 LT	0.442	
300W	6+25.2	23.0 RT	6+38.1	23.0 RT	0.464	
300W	6+30.0	23.0 LT	6+73.4	23.0 LT	1.562	
300W	6+30.0	23.0 LT	6+73.4	23.0 LT	3.125	
300W	6+47.5	26.1 RT	6+57.6	43.8 RT	1.44	curve section
300W	6+47.5	26.1 RT	6+57.7	46.9 RT	0.9	curve section
300W	6+52.9	18.3 RT	6+63.2	56.7 RT	12.048	
300W	6+75.0	9.2 LT	8+19.6	14.0 LT	50.673	
300W	6+82.0	104.2 RT	7+49.7	11.8 RT	34.368	
300W	6+87.1	23.0 LT	7+22.3	23.0 LT	1.267	
300W	6+87.1	23.0 LT	7+22.3	23.0 LT	5.13	
300W	6+88.0	52.5 RT	7+12.6	23.0 RT	1.62	curve section
300W	6+88.0	52.5 RT	7+12.6	23.0 RT	3.24	curve section
SR-89	13+61.5	40.5 LT	15+45.3	36.5 LT	55.2	drain line trench patching
SR-89	14+47.3	40.6 RT	14+70.4	51.0 RT	1.35	match existing on ends
SR-89	14+47.3	38.1 RT	14+72.8	48.4 RT	2.4	
SR-89	14+60.0	44.0 RT			3.06	Ped ramp on SW corner
SR-89	15+22.1	39.5 LT	15+67.1	39.5 LT	2.025	
SR-89	15+22.1	42.0 LT	15+75.1	42.0 LT	5.724	ave. length includes up to driveway
SR-89	15+22.1	42.0 LT	15+75.1	42.0 LT	5.04	area between sidewalk & back of curb
SR-89	15+67.1	39.5 LT	15+75.1	42.0 LT	0.54	ave dim. & area - driveway segment

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	16+17.4	36.0 LT	16+29.3	36.0 LT	0.576	
SR-89	16+17.4	39.5 LT	16+29.3	39.5 LT	1.296	to match existing
SR-89	16+75.1	36.0 LT	17+04.1	36.0 LT	1.44	
SR-89	16+75.2	43.1 LT	16+83.2	39.5 LT	0.63	ave dim. & area - driveway segment
SR-89	16+75.2	43.1 LT	17+04.2	43.3 LT	1.44	
SR-89	16+75.2	43.1 LT	17+04.2	43.3 LT	2.808	area between sidewalk and back of curb
SR-89	16+83.2	39.5 LT	16+96.2	39.5 LT	0.585	
SR-89	16+96.2	39.5 LT	17+04.2	43.3 LT	0.63	ave dim. & area - driveway segment
					327.124	

027410060 **HMA - 3/4 inch** 240 Ton

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	4+94.9	83.2 RT	6+44.0	13.9 RT	21.739	
300W	5+25.9	52.0 RT	6+04.0	27.0 RT	21.39	
300W	5+91.6	80.0 LT	6+71.6	21.0 LT	16.43	
300W	6+08.1	76.7 LT	6+36.8	37.1 LT	27.581	
300W	6+52.9	18.3 RT	6+63.2	56.7 RT	9.726	
300W	6+75.0	9.2 LT	8+19.6	14.0 LT	40.908	
300W	6+82.0	104.2 RT	7+49.7	11.8 RT	27.745	
SR-89	13+61.5	40.5 LT	15+45.3	36.5 LT	44.563	
SR-89	14+47.3	38.1 RT	14+72.8	48.4 RT	1.938	
SR-89	15+22.1	42.0 LT	15+75.1	42.0 LT	5.425	
SR-89	16+17.4	36.0 LT	16+29.3	36.0 LT	0.465	
SR-89	16+75.1	36.0 LT	17+04.1	36.0 LT	1.163	
SR-89	16+75.2	43.1 LT	17+04.2	43.3 LT	3.023	
					222.096	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027650020	**Pavement Message Paint**	84	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
1200N	25+32	17.0 LT	25+35	20.0 RT	4.0	CROSSWALK
1200N	25+42	0.0 RT			1.0	STOP BAR
300W	3+66	0.0 RT			1.0	LEFT TURN ARROW
300W	4+18	0.0 RT			1.0	LEFT TURN ARROW
300W	4+32	0.0 RT			3.0	STOP BAR
300W	4+79	51.0 LT	4+06	41.0 RT	10.0	CROSSWALK
300W	5+60	13.0 RT			1.0	RAILROAD CROSSING BAR
300W	5+64	0.0 RT			3.0	STOP BAR
300W	5+77	0.0 RT			1.0	LEFT TURN ARROW
300W	5+83	41.0 LT	5+37	22.0 RT	8.0	CROSSWALK
300W	5+86	13.0 RT			4.0	RAILROAD RXR MESSAGE
300W	6+10	13.0 RT			1.0	RAILROAD CROSSING BAR
300W	6+14	13.0 RT			1.0	STOP BAR
300W	6+28	0.0 RT			1.0	LEFT TURN ARROW
300W	7+15	12.0 LT			1.0	STOP BAR
300W	8+15	7.0 LT			1.0	RAILROAD CROSSING BAR
300W	8+40	7.0 LT			4.0	RAILROAD RXR MESSAGE
300W	8+65	7.0 LT			1.0	RAILROAD CROSSING BAR
SR-89	13+70	2.0 RT			1.0	LEFT TURN ARROW
SR-89	14+18	47.0 LT	14+56	38.0 RT	12.0	CROSSWALK
SR-89	14+20	2.0 RT			1.0	LEFT TURN ARROW
SR-89	14+29	0.0 RT			3.0	STOP BAR
SR-89	15+11	38.0 LT	15+84	50.0 RT	14.0	CROSSWALK
SR-89	15+54	0.0 RT			4.0	STOP BAR
SR-89	15+69	5.0 RT			1.0	LEFT TURN ARROW
SR-89	16+19	5.0 RT			1.0	LEFT TURN ARROW
					84.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit

027650030 **Remove Pavement Markings** 1,150 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
SR-89	11+38.0	2.0 LT	14+28.0	2.0 LT	290.0	
SR-89	11+38.0	8.5 RT	14+33.0	8.5 RT	295.0	
SR-89	15+52.0	2.0 LT	18+27.0	2.0 LT	275.0	
SR-89	15+61.0	8.5 RT	18+27.0	8.5 RT	266.0	
					1,126.0	

027650050 **Pavement Marking Paint** 10 gal

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	3+62	6.5 RT	4+27	6.5 RT	0.481	
300W	3+62	6.5 LT	4+37	6.5 LT	0.556	
300W	5+60	5.0 RT	6+44	5.0 RT	0.622	
300W	5+69	7.0 LT	6+13	7.0 LT	0.326	
300W	6+49	7.0 LT	7+11	4.5 LT	0.115	
300W	7+11	4.5 LT	7+92	0.0 RT	0.601	
SR-89	11+38	2.0 LT	14+28	2.0 LT	2.148	
SR-89	12+79	8.5 RT	14+33	8.5 RT	1.141	
SR-89	12+90	13.5 LT	14+27	13.5 LT	0.127	
SR-89	13+00	20.0 RT	14+38	20.0 RT	0.128	
SR-89	15+43	13.5 LT	16+87	13.5 LT	0.133	
SR-89	15+52	2.0 LT	16+87	2.0 LT	1.0	
SR-89	15+61	8.5 RT	18+27	8.5 RT	1.97	
SR-89	15+67	20.0 RT	16+87	20.0 RT	0.111	
					9.459	

027710025 **Concrete Curb and Gutter Type B1** 220 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+23.7	38.6 RT	5+49.4	23.5 RT	40.0	curve section
300W	5+88.5	69.7 LT	6+19.1	23.5 LT	75.0	curve section
300W	5+95.6	78.2 LT	5+88.5	69.7 LT	10.0	
SR-89	14+47.3	40.6 RT	14+70.4	51.0 RT	30.0	match existing on ends
SR-89	15+22.1	39.5 LT	15+67.1	39.5 LT	45.0	
SR-89	16+83.2	39.5 LT	16+96.2	39.5 LT	13.0	
					213.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit

027710045 **Concrete Driveway Flared, 7 inch Thick** 570 sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+62.8	23.0 RT	6+25.2	23.0 RT	380.0	includes driveway lead-in to RR shed
SR-89	15+67.1	39.5 LT	15+75.1	42.0 LT	30.0	ave dim. & area - driveway segment
SR-89	16+17.4	39.5 LT	16+29.3	39.5 LT	72.0	to match existing
SR-89	16+75.2	43.1 LT	16+83.2	39.5 LT	35.0	ave dim. & area - driveway segment
SR-89	16+96.2	39.5 LT	17+04.2	43.3 LT	35.0	ave dim. & area - driveway segment
					552.0	

027710080 **Pedestrian Access Ramp Type E** 700 sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+37.0	30.0 RT			210.0	NE ramp near gas station
300W	5+85.0	46.0 LT			120.0	NW ped ramp near car lot
300W	6+52.0	36.0 RT			100.0	ramp on corner of 1200 N
300W	6+95.0	35.0 RT			100.0	ramp on corner of 1200 N
SR-89	14+60.0	44.0 RT			170.0	corner near church
					700.0	

02771020* **Concrete Curb & Gutter Type A** 170 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+59.4	23.0 RT	5+62.8	23.0 RT	3.4	
300W	6+25.2	23.0 RT	6+38.1	23.0 RT	12.9	
300W	6+30.0	23.0 LT	6+73.4	23.0 LT	43.4	
300W	6+47.5	26.1 RT	6+57.7	46.9 RT	25.0	curve section
300W	6+87.1	23.0 LT	7+22.3	23.0 LT	35.2	
300W	6+88.0	52.5 RT	7+12.6	23.0 RT	45.0	curve section
					164.9	

02771030* **Concrete Curb and Gutter Transition** 25 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+49.4	23.5 RT	5+59.4	23.0 RT	10.012	
300W	6+19.1	23.5 LT	6+30.0	23.0 LT	10.911	
					20.923	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
027760010	**Concrete Sidewalk**	1,750	sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
					-530.0	Sidewalk: -700 sq ft of ped ramps
300W	5+23.7	38.6 RT	5+59.4	23.0 RT	300.0	ave width incl. sidewalk transition
300W	5+59.4	23.0 RT	5+68.6	25.0 RT	40.0	ave. sidewalk length up to drway
300W	5+88.5	69.7 LT	6+19.1	23.5 LT	400.0	ave width incl. sidewalk transition
300W	6+04.1	81.2 LT	5+88.5	69.7 LT	125.0	ave width incl. sidewalk transition
300W	6+14.7	27.0 RT	6+38.1	23.0 RT	210.0	
300W	6+19.1	23.5 LT	6+30.0	23.0 LT	54.557	transition to 4' width
300W	6+30.0	23.0 LT	6+73.4	23.0 LT	173.6	
300W	6+47.5	26.1 RT	6+57.6	43.8 RT	80.0	curve section
300W	6+87.1	23.0 LT	7+22.3	23.0 LT	285.0	
300W	6+88.0	52.5 RT	7+12.6	23.0 RT	180.0	curve section
SR-89	15+22.1	42.0 LT	15+75.1	42.0 LT	318.0	ave. length includes up to driveway
SR-89	16+75.2	43.1 LT	17+04.2	43.3 LT	80.0	
					1,716.157	

02813000*	**Landscape Reconstruction**	1	Lump

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	4+62.1	LT	4+89.2	LT	1.0	lump sum item
					1.0	

028210014	**4 ft Chain Link Fence, Type II**	75	ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+92.2	53.9 RT	6+93.0	53.0 RT	1.204	
300W	6+93.0	53.0 RT	6+93.4	48.9 RT	4.119	
300W	6+93.4	48.9 RT	7+06.7	29.0 RT	23.935	
300W	7+06.7	29.0 RT	7+12.6	28.0 RT	5.984	
300W	7+12.6	28.0 RT	7+46.7	28.0 RT	34.1	
300W	7+46.7	28.0 RT	7+46.7	22.6 RT	5.4	
					74.742	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit

028210018 **6 ft Chain Link Fence, Type II** 32 ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+23.2	29.8 LT	6+50.7	43.6 LT	30.768	
					30.768	

028910005 **Remove Sign** 3 Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+17.0	25.0 LT			1.0	remove stop sign
SR-89	14+25.0	40.0 RT			1.0	remove ped x-ing sign
SR-89	15+17.0	42.0 LT			1.0	remove ped x-ing sign
					3.0	

028910010 **Relocate Sign** 2 Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
1200N	25+19.5	25.6 LT	25+30.0	29.0 LT	1.0	street sign
1200N	25+31.0	15.5 LT	25+40.0	21.0 LT	1.0	stop sign
					2.0	

028910132 **Sign Type P-1** 15 sq ft

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	5+60.0	30.0 RT			7.1	
300W	8+65.0	17.0 LT			7.1	
					14.2	

028910170 **Sign Type P-1, 30 inch X 30 inch** 4 Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
1200N	26+00.0	18.0 LT			1.0	
SR-89	12+20.0	47.0 RT			1.0	
SR-89	15+50.0	41.0 LT			1.0	
SR-89	17+50.0	51.0 LT			1.0	
					4.0	

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
028910175	**Sign Type P-1, 36 inch X 36 inch**	1	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	7+40.0	22.0 LT			1.0	
					1.0	

Item Number	Description	Use Qty	Unit
028910180	**Sign Type P-1, 48 inch X 48 inch**	2	Each

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+15.0	28.0 RT			1.0	Railroad Crossbuck
300W	7+15.0	26.0 LT			1.0	Railroad Crossbuck
					2.0	

Item Number	Description	Use Qty	Unit
032110010	**Reinforcing Steel - Coated**	1,650	lb

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+59.3	43.8 RT			184.0	
300W	6+87.1	41.7 RT			184.0	
300W	7+09.5	21.2 RT			184.0	
300W	7+13.1	21.0 LT			184.0	
SR-89	11+49.9	45.8 LT			184.0	
SR-89	13+96.4	39.6 LT			192.0	
SR-89	15+17.1	37.0 LT			250.0	
SR-89	15+42.1	37.0 LT			284.0	
					1,646.0	

Detailed Report

SP-0089(63)310 **Version: 1**

SR-89 AT 300 WEST, LEHI

10 - ROADWAY **Alt Group: 0** **Alt #: 0**

Item Number	Description	Use Qty	Unit
033100020	**Concrete- Small Structure**	13	cu yd

Line/Sheet	From Station	From Offset	To Station	To Offset	Qty	Comment
300W	6+59.3	43.8 RT			1.41	
300W	6+87.1	41.7 RT			1.41	
300W	7+09.5	21.2 RT			1.41	
300W	7+13.1	21.0 LT			1.41	
SR-89	11+49.9	45.8 LT			1.41	
SR-89	13+96.4	39.6 LT			1.55	
SR-89	15+17.1	37.0 LT			1.86	
SR-89	15+42.1	37.0 LT			2.39	
					12.85	

State-Red Book with Full Size Plan Sheets

X. Special Provisions

February 18, 2004

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 00555M

PROSECUTION AND PROGRESS

Add the following to Part 1, General, Paragraph 1.12, "Limitation of Operations":

D. Comply with the following construction phasing:

Phase 1 – Complete **all** work, including wiring, up to the installation of mast arms, signal heads, the tie in of new curb, gutter and sidewalk to the new railroad crossing panels and the sidewalk in the area of the new railroad crossing arms. Maintain the work site in a clean, orderly condition. Remove traffic control not required for subsequent phases.

Phase 2 – Union Pacific Railroad/UTA (UPRR) crossing installation and preemption work by UPRR. Railroad crossing work may lag the Phase 1 work by 30 days. Railroad preemption work may lag railroad crossing work by an additional 30 days. Coordinate with UPRR for their schedule of activities to ensure adequate lead time.

Contractor will not be allowed to work during Phase 2. Working Days will not be charged to the Contract during Phase 2.

Phase 3 – After Union Pacific Railroad has installed their new equipment, crossing panels and preemption system, install all remaining curb, gutter, sidewalk and the remaining work items. Complete and make operational the signal system. The Engineer will provide written notification of the completion of Phase 2 to the Contractor. Contractor will have 8 days after the notification to finalize the work. The 8 days will be part of, not in addition to, the contract time.

Requests to postpone the contract work (as described in Phase 1 above) in order to wait for completion of UPRR will not be considered.

E. Local Limitations:

a. 48 hours prior to beginning any construction which will interfere with traffic, contact local emergency services (Police, Fire, and Ambulance). Contact Lehi City Public Works Director to coordinate traffic control issues (801-768-9167)

F. Right of Way Commitments:

a. Premium Oil – 290 W. State Street (Parcel 2, 2:E)
   i. Contact information:
      Aaron Bybee, ph. (801) 768-8887
   ii. Limit construction to half of 300 West driveway(s) at a time to accommodate traffic flow and deliveries to business.
   iii. Coordinate paving and other activities with Premium Oil prior to commencing activities.
   iv. Make a minimum of three "In Person" contacts with Premium Oil.

b. Bown's Lehi Motors – 350 W. State Street (Parcel 3, 3:E)
   i. Contact information:
      Shafter Bown, ph. (801) 830-0634
   ii. Minimize work in and blockage of the temporary construction easement.
   iii. Make a minimum of three "In Person" contacts with the Owner.
   iv. Coordinate paving and other activities with Owner prior to commencing activities.
   v. Take extreme caution to avoid damaging the existing shallow sewer lateral in east parking lot and roadway.

c. Patterson Residence – 1216 North 300 West (Parcel 5:C, 5:E)
   i. Contact Information:
      Verle Patterson, ph. (801) 766-1791
   ii. Make a minimum of three "In Person" contacts with the Owner.

February 18, 2004

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 00727M

CONTROL OF WORK

Add the Following to Part 1, GENERAL, Paragraph 1.7, "COOPERATION WITH UTILITIES":

H. **Qwest** has underground cables and overhead lines within the city streets. Relocation of one phone pedestal is required. Contact person is Jeff Stapley (Qwest) at (801) 974-8505.

Questar Gas has underground lines through the project area. Conflict is anticipated at the intersection of 300 West / 1200 North and looping of existing gas lines will be required. Inform Questar Gas prior to construction activities. Contact person is Kyle Secretan at (801) 324-3389.

Lehi City has power, culinary water, pressure irrigation, and sewer lines within SR-89 (State Street), 300 West, and 1200 North. Impacts to the culinary water and pressure irrigation lines are anticipated. Exercise care regarding a shallow sewer lateral at STA 5+30. Contact should be made with Lee Barnes of the Water and Sewer Department prior to any construction work. Lee's number is (801) 768-7102. Contact Lehi Power Department Manager, Rod Olsen at (801) 768-9167, prior to construction. Contact should be made 24 hours prior to work on any facilities.

I. Contact Blue Stakes for utility locations two working days prior to work in any area. Utilities may exist that are not shown on the plans. Locations of utilities shown on plans are approximate.

J. Hang dig around existing utilities if they are encountered.

END OF SECTION

February 18, 2004

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 01893S

LOOP WATERLINE

PART 1 GENERAL

1.1 SECTION INCLUDES

Loop water line for potable and non-potable water pressure systems.

1.2 RELATED SECTIONS

A. Section 02324: Compaction

B. Section 03055: Portland Cement Concrete

1.3 REFERENCES

A. AWWA C600: AWWA Standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

B. AWWA C800: AWWA Standard for Underground Services Line Valves and Fittings.

C. AWWA C900: AWWA Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. Through 2 In., for Water.3

D. AWWA M11: AWWA Manual for Steel Pipe – Design and Installation.

E. ASTM D-1248-68: Polyethylene Plastics Molding and Extrusion Materials

1.4 PERFORMANCE REQUIREMENTS

A. Depth of Cover:
   1. 48-inches minimum to top of pipe.
   2. 72-inches maximum unless Engineer authorizes otherwise.

1.5 SUBMITTALS

A. Product Data: Submit manufacturers technical product data and installation instructions.

B. Project Record Documents: Submit a red-lined hard copy plan sheet showing as-constructed feature of water line loop. Show interface and spatial relationship between piping and adjacent structures.

1.6 SITE CONDITIONS

A. Minimize neighborhood traffic interruptions.

B. Do not turn on or turn off any valve prior to securing Engineer's and water company's permission.

PART 2 PRODUCTS

2.1 PIPES AND FITTINGS

A. Provide piping materials and factory fabricated piping products of sized, types, pressure ratings, and capacities as required and approved by Engineer and Water Company.
B. Provide sizes and type of equipment connections for fittings of material that matches pipe material used and piping system.
C. Encase Ductile Iron pipe in 8 m polyethylene film in tube or sheet form. Utilize film that conforms to ASTM D-1248-68- Polyethylene Plastics Molding and Extrusion Materials. Use purple film for pressure irrigation pipe.

2.2 PORTLAND CEMENT CONCRETE

A. Provide Class A(AE) Portland Cement Concrete.

PART 3 EXECUTION

3.1 PREPARATION

A. Do not shut down pipeline until couplings and fittings are on site.
B. Coordinate shutdown with Water Company.
C. Connections to steel or transite pipe require transition couplings or sleeves with transition gaskets.
D. Restrain all joints with restrained joint followers.

3.2 INSTALLATION

A. PIPES AND FITTINGS

1. Steel Pipe: Install per AWWA M11.
2. Ductile Iron Pipe: Install per AWWA C600.

3. Polyethylene Pipe: For 3-inches and smaller pipe follow AWWA C901. Install all other sizes per manufacture's installation instructions.
4. Polyvinyl Chloride Pipe: Install per AWWA C900 and AWWA C905.

B. CONCRETE THRUST BLOCKS

1. Provide thrust blocks on all plugs, caps, tees, hydrants and vertical or horizontal bends.
2. Sides of thrust blocking not subject to thrust may be placed against forms.
3. Wrap all fittings with plastic or other approved material prior to pouring thrust block.

C. DISINFECTION

1. Provide and install clean pipe, fittings and materials.
2. Take necessary precautions to protect pipe and fittings from contamination.
3. Clean out any dirt or other substance that enter pipe.
4. Swab the interior of the pipe and fittings with a 1 percent hypochlorite disinfecting solution.

3.3 BACKFILLING AND PATCHING

A. Prior to backfilling, secure Engineer's or Water Company's acceptance of pipe and concrete thrust block installation.

B. Backfill in accordance with standard Drawing DG-5

C. In areas outside pavement limits place untreated base course in the upper 6" of trench.

END OF SECTION

April 7, 2003

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 02610M

PIPE CULVERTS

Add the following to Part 1:

1.4 ACCEPTANCE CRITERIA

A. Pipe culverts accepted according to the criteria outlined in this section. The Engineer may require testing of any or all culverts for compliance with the criteria. The Engineer reviews and approves proposed corrections. The acceptance of pipe culvert is based on five requirements: 1) Horizontal and vertical alignment deviations; 2) Barrel distortions; 3) Damages to the pipe; 4) Joint fitting; 5) Coating integrity. Following is a description of the requirements:

1. **Horizontal and vertical alignment deviations**
   Measure horizontal and vertical installation deviations from the culvert's final construction survey stakes. Do not exceed the tolerances shown on Table A of this section.
2. **Barrel distortions**
   Measure load distortions along a straight line through the centerline of the pipe. Do not exceed the tolerances shown on Table A of this section.
3. **Damaged culverts**
   Remove or repair pipe culverts that are irregular or distorted, have cracks, dents, holes, splits, or loose nuts or bolts. Remove all pipes with a damaged invert.
4. **Joints**
   Remove all pipe culverts that have damaged joints that allow the culvert to leak. Re-install or remove all pipes that do not connect properly. Connect joints according to manufacturers recommendations. Provide a manufacturer Certificate of Compliance for the pipe joints.
5. **Coating integrity**
   Repair all pipe coatings, according to manufacturer recommendations, that don't have the required thickness or that have been damaged. Provide a Manufacturer Certificate of compliance for the pipe coating.

Table - A TOLERANCES

Alignment Tolerances			Distortions Gradual Ovaling or Elliptical	
Design Grade	**Max. Line Deviation**	**Max. Grade Deviation**	**Nominal Pipe Diameter** *	**Maximum Distortions** **
	Percent of Nominal Pipe Diameter	inch/100feet	inch	Inch
> 1 %	5	1 1/2	18	+/- 0 - 7/8
			24	+/- 1 - 1/4
≤ 1 %	5	1	30	+/- 1 - 1/2
			36	+/- 1 - 7/8
< 0.5 %		± 0.5	42	+/- 2
			48 +/-	+/- 2 - 3/8

Notes For nominal culvert diameters larger than 48 inch, use measured diameter to calculate 5 percent allowable distortion. *
Maximum distortions are used to define dimensions associated with allowable pipe deflections. Measure directly or by use of a mandrel test. **

END OF SECTION

August 12, 2002

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 02742S

PROJECT SPECIFIC SURFACING REQUIREMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Required PG Asphalt or emulsion.

B. Number of gyrations to use for Superpave Mix Design.

PART 2 PRODUCTS

2.1 MIXES

A. Hot Mix Asphalt (HMA): (Refer to bid item for size)

1. PG 64-34 Asphalt.

2. $N_{initial}$ 8 N_{design} 100 N_{final} 160

B. Tack Coat:

1. Emulsified Asphalt SS-1 H
2. Diluted 1:1.

PART 3 EXECUTION **Not used.**

END OF SECTION

October 9, 2003

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 02745S

ASPHALT MATERIAL

Delete Section 02745 in its entirety and replace with the following.

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Asphalt materials.

1.2 PAYMENT PROCEDURES

A. Price adjustments for asphaltic cement and liquid asphalt (chip-seal emulsions and/or cut-backs):
   1. Standard department procedures governs price adjustments made where asphalt material does not conform to the specifications
      a. If the price adjustment exceeds 30 percent, the Engineer may order the removal of any or all the defective asphalt material.
      b. The pay factor for such material is 0.50 when allowed to remain in place.

B. Price adjustments for Performance Graded Asphalt Binder (PGAB):
   1. Standard department PGAB management plan governs price reductions or removal of material where they binder does not conform to the specifications.

1.3 REFERENCES

A. AASHTO M 81: Cut-Back Asphalt (Rapid-Curing Type).

B. AASHTO M 82: Cut-Back Asphalt (Medium-Curing Type).

C. AASHTO M 140: Emulsified Asphalt.

D. AASHTO M 208: Cationic Emulsified Asphalt.

E. AASHTO M 226: Viscosity Graded Asphalt Cement.

F. AASHTO MP 1: Performance Graded Asphalt Cement.

G. AASHTO T 44: Solubility of Bituminous Materials.

H. AASHTO T 49: Penetration of Bituminous Materials.

I. AASHTO T 50: Float Test for Bituminous Materials.

J. AASHTO T 51: Ductility of Bituminous Materials.

K. AASHTO T 59: Testing Emulsified Asphalt.

L. AASHTO T 201: Kinematic Viscosity of Asphalts.

M. AASHTO T 228: Specific Gravity of Semi-Solid Bituminous Materials.

N. AASHTO T 240: Effect of Heat and Air on a Moving Film of Asphalt (Rolling Thin-Film Oven Test).

O. AASHTO T 300: Force Ductility of Bituminous Materials.

P. AASHTO T 301: Elastic Recovery Test of Bituminous Materials by Means of a Ductilometer.

Q. ASTM D 92: Flash and Fire Points by Cleveland Open Cup.

R. ASTM D 1190: Concrete Joint Sealer, Hot-Applied Elastic Type.

S. ASTM D 2007: Characteristic Groups in Rubber Extender and Processing Oils and Other Petroleum-Derived Oils by the Clay-Gel Absorption Chromatographic Method.

T. ASTM D 2026: Cutback Asphalt (Slow-Curing Type).

U. ASTM D 3405: Joint Sealants, Hot-Applied, for Concrete and Asphalt Pavements.

V. ASTM D 4402: Viscosity Determinations of Unfilled Asphalts Using the Brookfield Thermosel Apparatus.

W. ASTM D 5167: Melting of Hot-Applied Joint and Crack Sealant and Filler for Evaluation.

X. ASTM D 5329: Sealants and Fillers, Hot-Applied, For Joints and Cracks in Asphaltic and Portland Cement Concrete Pavements.

Y. ASTM D 5801: Toughness and Tenacity of Bituminous Materials.

Z. CA 332: California Test Method for Torsional Recovery of Modified Asphalt Residue.

AA. UDOT Method 967: Cold Bend Flexibility

1.4 SUBMITTALS

A. For each shipment of material, supply a vendor-prepared bill of lading showing the following information:
   1. Type and grade of material
   2. Type and amount of additives, used, if applicable
   3. Destination
   4. Consignee's name
   5. Date of Shipment
   6. Railroad car or truck identification
   7. Project number
   8. Loading temperature
   9. Net weight in tons (or net gallons corrected to 60 degrees F, when requested)
   10. Specific gravity
   11. Bill of lading number
   12. Manufacturer of asphalt material

1.5 DELIVERY, STORAGE, AND HANDLING

A. Each shipment of asphalt material must:
   1. Be uniform in appearance and consistency.
   2. Show no foaming when heated to the specified loading temperature.

B. Do not supply shipments contaminated with other asphalt types or grades than those specified.

1.6 GRADE OF MATERIAL

A. The Engineer determines the grade of material to be used based on the supply source designated by the Contractor when the bid proposal lists more than one grade of asphalt material.

PART 2 PRODUCTS

2.1 PERFORMANCE GRADED ASPHALT BINDER (PGAB)

A. Supply PGABs under the Approved Supplier Certification (ASC) System. Refer to UDOT Asphalt Binder Quality Management Plan.

B. As specified in AASHTO M320, with the following modifications:
   1. Delete superscript (f) for all specified grades having algebraic differences of 92 degrees C or greater between the high and low design temperatures.
   2. Add Direct Tension Test for all specified grades having algebraic differences of 92 degrees C or greater between the high and low design temperatures.
      a. Failure Strain, minimum of 1.5 percent at 1.0 mm/min.
      b. Failure Stress, minimum of 4.0 Mpa
   3. Delete G*/sin delta requirement for the original binder on all specified grades having algebraic differences of 92 degrees C or greater between the high and low design temperatures.
   4. Add G* and phase angle (delta) requirements for the original binder on all specified grades having an algebraic difference of 92 degrees C between the high and low design temperatures.
      a. G* (complex modulus), 1.3 kPa, minimum
      b. Phase angle (delta), 74 degrees, maximum
   5. Add G* and phase angle (delta) requirements for the original binder on all specified grades having an algebraic difference of 98 degrees C or greater between the high and low design temperatures.
      a. G* (complex modulus), 1.3 kPa, minimum
      b. Phase angle (delta), 71 degrees, maximum
   6. Add Toughness and Tenacity Test for all specified grades having algebraic differences of 92 degrees C or greater between the high and low design temperatures.
      a. Meet a minimum of 75 lb-in 50 lb-in respectively for each test specimen.

2.2 ASPHALT CEMENT, HOT-POUR BITUMINOUS CRACK SEALANT, LIQUID ASPHALTS, REJUVENATING AGENTS

A. As specified in AASHTO M 226, Table 2 with the following modifications:
   1. Delete and replace ductility at 77°F(25°C) with ductility at 39.2°F(4°C) with values as detailed below.

AC - 2.5	AC - 5	AC - 10	AC - 20
50+	25+	15+	5+

B. As specified for cationic and anionic emulsified asphalt.
   1. All standard Slow Setting (SS, CSS), Medium Setting (MS, CMS), and Rapid Setting (RS, CRS) grades; inclusive of all High-Float designations (HF).
   2. Supply under the Approved Supplier Certification System (ASC).
   3. Meet AASHTO M 208 and M 140.

C. Conform to the requirements of:
   1. Table 1: Cationic Rapid Setting Emulsified Polymerized Asphalt (CRS-2P); or
   2. Table 2: Latex Modified Cationic Rapid Setting Emulsified Asphalt (LMCRS-2); or
   3. Table 3: Cationic Medium Setting Emulsified Asphalt (CMS-2S); or
   4. Table 4: High Float Medium Setting Emulsified Asphalt (HFMS-2): or
   5. Table 5: High Float Medium Setting Emulsified Polymerized Asphalt (HRMS-2SP); or
   6. Table 6: High Float Rapid Setting Emulsified Polymerized Asphalt (HFRS-2P); or
   7. Table 7: Cationic Rapid Setting Emulsified Asphalt (CRS-2A, B).

D. Curing cut-back asphalt:
   1. As specified for slow curing (SC) in ASTM D 2026.
   2. As specified for medium curing (MC) in AASHTO M 82.
   3. As specified for rapid curing (RC) in AASHTO M 81.

E. Conform to requirements for Emulsified Asphalt Pavement Rejuvenating Agent:
   1. Table 8: Type B
   2. Table 9: Type B Modified
   3. Table 10: Type C
   4. Table 11: Type D

F. Conform to the requirements for Hot-Pour Bituminous Crack Sealant:
   1. Table 12

Table 1

Cationic Rapid Setting Emulsified Polymerized Asphalt (CRS-2P)			
Tests	**AASHTO Test Method**	**Min.**	**Max.**
Emulsion			
Viscosity , SFS, 140°F (60°C), sec (Project-site Acceptance/Rejection Limits)	T59	100	400
Settlement (a) 5 days, percent	T 59		5
Storage Stability Test (b) 1 d, 24 h, percent	T 59		
Demulsibility (c) 35 ml, 0.8% sodium dioctyl Sulfosucinate, percent	T 59	40	
Particle Charge Test	T 59	Positive	
Sieve Test, percent	T 59		0.10
Distillation			
Oil distillate, by vol of emulsion, percent			0
Residue (d), percent		68	
Residue from Distillation Test			
Penetration, 77°F(25°C), 100 g, 5 s, dmm	T 49	80	150
Ductility, 39.2°F(4°C), 5 cm/min, cm Toughness, lb-in Tenacity, lb-in	T 51 ASTM D5801 ASTM D5801	35 75 50	
Solubility in trichloroethylene, percent	T 44	97.5	

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than a five-day time; or the purchaser may require that the settlement test be run from the time the sample is received until it is used, if the elapsed time is less than 5 days.
(b) The 24-hour (1-day) storage stability test may be used instead of the five-day settlement test.
(c) The demulsibility test is made within 30 days from date of shipment.
(d) Distillation is determined by AASHTO T 59, with modifications to include a 350 ± 5 °F (177±3°C) maximum temperature to be held for 15 minutes.

Modify the asphalt cement prior to emulsification.

Table 2

Latex Modified Cationic Rapid Setting Emulsified Asphalt (LMCRS-2)			
Tests	**AASHTO Test Method**	**Min.**	**Max.**
Emulsion			
Viscosity, SFS, 122 °F (50 °C), Sec (Project Site Acceptance/Rejection Limits)	T59	75	300
Settlement (a) 5 days, percent	T 59		5
Storage Stability Test (b) 1 d, 24 h, percent	T 59		1
Demulsibility (c) 35 ml, 0.8% sodium dioctyl Sulfosucinate, percent	T 59	40	
Particle Charge Test	T 59	Positive	
Sieve Test, percent	T 59		0.3
Distillation			
Oil distillate, by vol of emulsion, percent			0
Residue (d), percent		65	
Residue from Distillation Test			
Penetration, 77 °F(25 °C), 100 g, 5 s, dmm	T49	40	200
Torsional Recovery, (e)		18	

(a) The test requirement for settlement may be waived when the emulsified asphalt is used in less than a five-day time; or the purchaser may require that the settlement test be run from the time the sample is received until it is used, if the elapsed time is less than 5 days.
(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.
(c) Make the demulsibility test within 30 days from date of shipment.
(d) Determine distillation by AASHTO T 59,with modifications to include a 350 ± 5 °F (177±3°C) maximum temperature to be held for 15 minutes.
(e) CA 332 (California Test Method)

Co-mill latex and asphalt during emulsification

Table 3

Cationic Medium Setting Emulsified Asphalt (CMS-2S)		
Tests	**AASHTO Test Method**	**Specification**
Emulsion		
Viscosity, SSF, 122°F (50°C), sec.	T 59	50 - 450
Percent residue	T 59	60 min
One-day storage stability, percent	T 59	1 max
Sieve, percent	T 59	0.10 max
Particle charge	T 59	Positive
Oil Distillate, percent by volume of emulsion	T 59	5-15
Residue		
Penetration, 77°F (25°C), 100g, 5 sec, dmm	T 59	100-250
Solubility, percent	T 59	97.5 min.

Table 4

High Float Medium Setting Emulsified Asphalt (HFMS-2)			
Tests	**AASHTO Test Method**	**Min.**	**Max.**
Emulsion			
Viscosity, SSF, 122 °F(50 °C), Sec (Project Site Acceptance/Rejection Limits	T59	70	300
Storage Stability Test, 1d, 24 h, percent	T59		1.0
Sieve Test , percent	T59		0.1
Distillation	T59		
Oil Distillate, by vol of emulsion, percent	T59	NA	NA
Residue, percent	T59	65	
Residue from Distillation Test			
Penetration, 77 °F(25 °C), 100g,5 s, dmm	T49	50	200
Float Test, 140 °F(60 °C), sec	T50	1200	
Solubility in Trichloroethylene, percent	T44	97.5	
Ductility, 77 °F(25 °C) 5cm/min, cm	T51	40	

Table 5

High Float Medium Setting Emulsified Polymerized Asphalt (HFMS-2P) (a)			
Tests	**AASHTO Test method**	**Min.**	**Max.**
Emulsion			
Viscosity , SSF ,122°F (50°C), sec (Project Site Acceptance/Rejection Limits)	T 59	100	450
Storage Stability Test (a) 1 d, 24 h, percent	T 59		0.1
Sieve Test, percent	T 59		0.1
Distillation			
Oil distillate, by vol of emulsion, percent	T 59	1	7
Residue (c), percent	T 59	65	
Residue from Distillation Test			
Penetration, 77°F (25°C), 100 g, 5 s, dmm	T 49	70	300
Float Test, 140°F (60°C), sec	T 50	1200	~~300~~
Solubility in trichloroethylene, percent	T 44	97.5	
Elastic Recovery, 77°F (25°C), percent	T 301	50	

(a) Supply an HFMS-2SP (anionic, polymerized, high-float) as an emulsified blend of polymerized asphalt cement, water, and emulsifiers. Polymerize the asphalt cement with a minimum of 3.0% polymer by weight of the asphalt cement prior to emulsification. After standing undisturbed for a minimum of 24 hours, the emulsion shall be smooth and homogeneous throughout with no white, milky separation, pumpable, and suitable for application through a distributor.
(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.
(c) Determine the distillation by AASHTO T 59, with modifications to include a 350 ± 5 °F (177±3°C) maximum temperature to be held for 15 minutes.

Table 6

High Float Rapid Setting Emulsified Polymerized Asphalt (HFRS-2P) (a)			
Tests	**AASHTO Test method**	**Min.**	**Max.**
Emulsion			
Viscosity, SFS @ 122°F (50°C), sec (Project Site Acceptance/Rejection Limits)	T 59	100	450
Storage Stability Test (a) 1 d, 24 h, percent	T 59		1
Demulsibility (b) 0.02 N Ca Cl_2, percent	T 59	40	
Sieve Test, percent	T 59		0.1
Distillation			
Oil distillate, by vol of emulsion, percent	T 59		3
Residue (c), percent	T 59	65	
Residue from Distillation Test			
Penetration, 77°F (25°C), 100 g, 5 s, dmm	T 49	70	150
Float Test, 140°F (60°C), sec	T 50	1200	
Solubility in trichloroethylene, percent	T 44	97.5	
Elastic Recovery, 77°F (25°C), percent	T 301	58	

(a) Supply an HFMS-2SP (anionic, polymerized, high-float) as an emulsified blend of polymerized asphalt cement, water, and emulsifiers. Polymerize the asphalt cement with a minimum of 3.0% polymer by weight of the asphalt cement prior to emulsification. After standing undisturbed for a minimum of 24 hours, the emulsion shall be smooth and homogeneous throughout with no white, milky separation, pumpable, and suitable for application through a distributor.
(b) May use the 24-hour (1-day) storage stability test instead of the five-day settlement test.
(c) Determine the distillation by AASHTO T 59, with modifications to include a 350 ± 5 °F (177±3°C) maximum temperature to be held for 15 minutes.

Table 7

Cationic Rapid Setting Emulsified Asphalt (CRS-2A,B)			
Tests	**AASHTO Test Method**	**Min**	**Max**
Emulsion			
Viscosity, SSF, 122°F (50°C), sec (Project Site Rejection/Acceptance Limits)	T 59	140	400
Storage stability test, 24 h, percent	T 59		1
Demulsibility, 35 mL 0.8 percent Sodium Dioctyl Sulfosucinate, percent	T 59	40	
Particle charge test	T 59	Positive	
Sieve test, percent	T 59		0.10
Distillation			
Oil distillate, by volume of emulsion, percent	T 59		0
Residue, percent	T 59	65	
Use PG58-22 and PG64-22 as base asphalt cement for CRS-2A, B, respectively. Specification for high temperature performance: original and RTFO G*/sinδ within 3 °C of grade.			

Table 8

Emulsified Type B Asphalt Pavement Rejuvenating Agent Concentrate		
Tests	**Test Method**	**Limits**
Viscosity, SSF, 77°F (25°C), sec	AASHTO T 59	25-150
Residue, percent W	AASHTO T 59 (mod) (a)	62 Min.
Sieve Test, percent W	AASHTO T 59	0.10 Max.
5-day Settlement	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
Pumping Stability (b)		Pass
Residue from Distillation (a)		
Viscosity @ 140°F(60°C), mm^2/s	AASHTO T 201	2500-7500
Solubility in 1,1,1 Trichloroethylene, percent	AASHTO T 44	98 Min.
Flash Point, COC	ASTM D 92	204 °C, Min.
Asphaltenes, percent W	ASTM D 2007	15 Max.
Saturates, percent W	ASTM D 2007	30 Max.
Aromatics, percent W	ASTM D 2007	25 Min.
Polar Compounds, percent W	ASTM D 2007	25 Min.
(a) Determine the distillation by AASHTO T-59 with modifications to include a 300 ± 5 °F (149±3°C) maximum temperature to be held for 15 minutes. (b) Test pumping stability by pumping 475 ml of Type B diluted 1 part concentrate to 1 part water, at 77°F (25°C) through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes with no significant separation or coagulation in pumped material.		
Type B: an emulsion of lube oil and/or lube oil extract blended with petroleum asphalt.		

Table 9

Emulsified Type B Modified Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SSF, 77°F (25°C), sec	AASHTO T 59	50-200
Residue by distillation or Evaporation (a), percent W	AASHTO T 59	62 Min.
Sieve Test, percent W	AASHTO T 59	0.20 Max.
5-day Settlement, percent W	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
Pumping Stability (b)		Pass
Residue from Distillation (a)		
Viscosity (c) 275°F (135 °C), cP	ASTM D 4402	150 - 300
Penetration, 77°F (25°C), dmm	AASHTO T 49	180 Min.
Solubility in 1,1,1 Trichloroethylene, percent	AASHTO T 44	98 Min.
Flash Point, COC, °F (°C)	AASHTO T 48	400(204) Min.
Asphaltenes, percent W	ASTM D 2007	20-40
Saturates, percent% W	ASTM D 2007	20 Max.
Polar Compounds, percent W	ASTM D 2007	25 Min.
Aromatics, percent W	ASTM D 2007	20 Min.
PC/S Ratio	ASTM D 2007	1.5 Min.
(a) Determine the distillation by AASHTO T-59 with modifications to include a 300±5°F (149 ± 3°C) maximum temperature to be held for 15 minutes. (b) Pumping stability is tested by pumping 475 ml of Type B diluted 1 part concentrate to 1 part water, at 77°F (25 °C) through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes with no significant separation or coagulation in pumped material. (c) Brookfield Thermocel Apparatus-LV model at 6 rpm with a #28 spindle at 2-98 torque.		
As required by the Asphalt Emulsion Quality Management system (Materials Manual Part 8-208), the supplier certifies that the base stock contains a minimum of 15 % by weight of Gilsonite Ore. Use the HCL precipitation method as a qualitative test to detect the presence of Gilsonite.		

Table 10

Emulsified Type C Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SFS, 77°F (25°C), sec	AASHTO T 59	10-100
Residue (a), percent W (Type C supplied ready to use 1:1 or 2:1.	AASHTO T 59 (a)	30 Min. 1:1 40 Min. 2:1
Sieve Test, percent W (b)		0.10 Max.
5-day Settlement, percent W	AASHTO T 59	5.0 Max.
Particle Charge	AASHTO T 59	Positive
pH (May be used if particle charge test is inconclusive)		2.0 - 7.0
Pumping Stability (c)		Pass
Tests of Residue from Distillation (a)		
Viscosity, 275°F (135°C), mm^2/s	AASHTO T 201	475-1500
Solubility in 1,1,1 Trichloroethylene, percent	AASHTO T 44	97.5 Min.
RTFO mass loss, percent W	AASHTO T 240	2.5 Max.
Specific Gravity	AASHTO T 228	0.98 Min.
Flash Point, COC	AASHTO T 48	232 °C, Min.
Asphaltenes, percent W	ASTM D 2007	25 Min., 45 Max.
Saturates, percent W	ASTM D 2007	10 Max.
Polar Compounds, percent W	ASTM D 2007	30 Min.
Aromatics, percent W	ASTM D 2007	15 Min.
(a) Determine the distillation by AASHTO T-59 with modifications to include a 300± 5°F (149 ± 3°C) maximum temperature to be held for 15 minutes. (b) Test method identical to AASHTO T 59 except that distilled water is used in place of 2 % sodium oleate solution. (c) Test pumping stability by pumping 475 ml of Type diluted 1 part concentrate to 1 part water, at 77°F (25°C) through a 1/4 inch gear pump operating at 1750 rpm for 10 minutes with no significant separation or coagulation in pumped material.		
As required by the Asphalt Emulsion Quality Management system (Materials Manual Part 8-208), the supplier certifies that the base stock contains a minimum of 10 % by weight of Gilsonite ore. Use the HCL precipitation method as a qualitative test to detect the presence of Gilsonite.		

Table 11

Emulsified Type D Asphalt Pavement Rejuvenating Agent Concentrate		
Property	**Test Method**	**Limits**
Viscosity, SFS, 77°F (25°C), sec	AASHTO T 59	30-90
Residue, (a) percent W	AASHTO T 59 (mod) (a)	65
Sieve Test, percent W	AASHTO T 59	0.10 Max.
pH		2.0 - 5.0
Residue from Distillation (c)		
Viscosity, 140°F (60°C), cm^2/s	AASHTO T 201	300-1200
Viscosity, 275°F (135°C), mm^2/s	AASHTO T 201	300 Min.
Modified Torsional Recovery (b)	CA 332 (Mod)	40 % Min.
Toughness, 77°F (25°C), in-lb	ASTM D 5801	8 Min.
Tenacity, 77°F (25°C), in-lb	ASTM D 5801	5.3 Min.
Asphaltenes, percent W	ASTM D 2007	16 Max.
Saturates, percent W	ASTM D 2007	20 Max.
(a) California test method #331 for recovery of residue. (b) Torsional recovery measurement to include first 30 seconds. (c) Determine the distillation by AASHTO T-59 with modifications to include a 300±5°F (149 ± 3°C) maximum temperature to be held for 15 minutes.		

2.3 HOT-POUR CRACK SEALANT FOR BITUMINOUS CONCRETE

A. Combine a homogenous blend of materials to produce a sealant meeting properties and tests in Table 12

B. Packaging and Marking: Supply sealant pre-blended, pre-reacted, and pre-packaged in lined boxes weighing no more than 30 lb.
   1. Use a dissolvable lining that will completely melt and become part of the sealant upon subsequent re-melting.
   2. Deliver the sealant in the manufacturer's original sealed container. Clearly mark each container with the manufacturer's name, trade name of sealant, batch or lot number, and recommended safe heating and application temperatures.

Table 12

Hot-Pour Bituminous Concrete Crack Sealant			
Application Properties:			
Workability:	Pour readily and penetrate 0.25 in and wider cracks for the entire application temperature range recommended by the manufacturer.		
Curing:	No tracking caused by normal traffic after 45 minutes from application.		
Asphalt Compatibility: ASTM D 5329, Sec 14.	No failure in adhesion. No formation of an oily ooze at the interface between the sealant and the bituminous concrete or softening or other harmful effects on the bituminous concrete.		
Material Handling:	Follow the manufacturer's safe heating and application temperatures.		
Test Method	**Property**	**Minimum**	**Maximum**
AASHTO T51	Ductility, modified, 1cm/min, 39.2°F (4°C), cm	30	
UDOT method 967	Cold Temperature Flexibility	no cracks	
AASHTO T 300 (a)	Force-Ductility, lb force		4
ASTM D 5329	Flow 140°F (60°C), 5 hrs 75 ° angle, mm		3
ASTM D 3405 (b)	Tensile-Adhesion, modified	300%	
AASHTO T 228	Specific Gravity, 60°F(15.6°C)		1.140
ASTM D 5329	Cone Penetration, 77°F(25°C), 150 g, 5 sec., dmm		90
ASTM D 5329	Resilience, 77°F(25°C), 20 sec., percent	30	
ASTM D 4402	Viscosity, 380°F(193.3°C), SC4-27 spindle, 20 rpm, cP		2500
ASTM D 5329	Bond as per ASTM D 1190, Section 6.4		Pass

(a) Maximum of 4 lb force during the specified elongation of 30 cm @ 1 cm/min, 39.2°F (4 °C).

(b) Use ASTM D 3405, Section 6.4.1. Delete bond and substitute tensile-adhesion test in accordance to D 5329.

PART 3 EXECUTION Not used.

END OF SECTION

February 2, 2004

SPECIAL PROVISION

PROJECT #SP-0089(63)310

SECTION 02765S

PAVEMENT MARKING PAINT

Delete Section 02765 in its entirety and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Furnish Acrylic Water Based pavement marking paint meeting Federal Specification TTP-1952 D and refer to 2.2 for resin requirement.

B. Apply to hot mix asphalt or Portland cement as edge lines, center lines, broken lines, guidelines, contrast lines, symbols and other related markings.

C. Remove pavement markings.

1.2 REFERENCES

A. AASHTO M 247: Glass Beads Used in Traffic Paint

B. ASTM D 562: Consistency of Paints Measuring Krebs Unit (KU) Viscosity Using the Stormer-Type Viscometer

C. ASTM D 2205: Selection of Tests for Traffic Paints

D. ASTM D 2743: Uniformity of Traffic Paint Vehicle Solids by Spectroscopy and Gas Chromatography

E. ASTM D 2805: Hiding Power of Paints by Reflectometry

F. ASTM D 3723: Pigment Content of Water-Emulsion Paints

G. ASTM D 3960: Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings

H. ASTM D 4451: Pigment Content of Paints

I. ASTM D 5381: X-Ray Fluorescence (XRF) Spectroscopy of Pigments and Extenders

J. ASTM E 1347: Standard Test Method for Color and Color-Difference Measurement by Tristimulus (Filter) Colorimetry

K. Federal Standards

1.3 ACCEPTANCE

A. Provide fixtures (ball valves, gate valves or other) on paint truck for the purposes of obtaining field samples.

B. Agitate the paint to allow for thorough mixing. Follow paint manufacturer's recommendation for agitation and mixing times.

C. Stop all agitation before sample is drawn.

D. All meters on the paint truck must be calibrated annually and certified for application rate verification. Calibration tolerances for meters must be +/- 0.5 pounds per gallon. Keep a clean, legible copy of calibration report with the paint truck. Certifications performed by company personnel, meter calibration companies or UDOT Equipment Certification Unit.

E. UDOT ENGINEER:
   1. Visually inspects each line to verify bead adhesion and compliance with specified line dimensions requirements.
   2. Verifies that the paint and beads are being applied within specified tolerances a minimum of once each production day.
   3. Verifies quantities used by either method:
      a. Measuring both paint and bead tanks prior to and after application.
      b. Witnessing the meter readings prior to and after application.
   4. Randomly sample each color of pavement marking paint used, minimum of one sample each per project.
      a. Use a clean one-pint metal paint can.
      b. Sample paint immediately after the paint has been completely agitated. (Stop all agitation before drawing the sample)
      c. Allow a minimum of 10 gallons to be applied prior to taking sample.
      d. Fill the sample container to within ½ inch of full.
      e. Seal the containers immediately by tightly attaching the container's lid.
      f. Submit paint samples to Central Chemistry Lab for acceptance.

g. For each sample include:
- Project Number
- Project Name
- Paint Manufacturer
- Batch Number
- Striping Company
- Color of Paint
- Est. Quantity
- Date Sampled
- Sampler's name

F. Repaint any line or symbol failing to meet bead adherence and dimensional requirements.

G. Price Reductions for Pavement Markings installed below the specified wet mil thickness are outlined in Table I.

Table I - Price Reduction for Wet Mil Thickness	
	Pay Factor
At the specified mil thickness	1.00
1-10 percent below the Specified wet mil thickness	0.75
11-15 percent below the Specified wet mil thickness	0.50
More than15 percent below the Specified wet mil thickness	Repaint Pavement Markings

H. Price reductions for pavement markings that fail to meet the requirements of Table III are outlined in Table II. When more than one of the requirements of Table III are deficient. The result with the highest price reduction governs.

Table II - Price Reductions	
	Pay Factor
At the specified requirements	1.00
Up to1 percent deficient	0.90
Up to 2 percent deficient	0.80
Up to 3 percent deficient	0.70
Up to 4 percent deficient	0.60
Up to 5 percent deficient	0.50
More than 5 percent below specified quantitative requirements	Repaint Pavement Markings

PART 2 PRODUCTS

2.1 Manufacturers

A. Select an acrylic water based pavement marking paint manufacturer, from the Accepted Products Listing (APL) maintained by the UDOT Research Division.

2.2 Paint

A. Follow Federal Standards 595B, 37875, 33538, and 11105. Meet the following requirements for Acrylic Water Based Paint as listed in Table III:

Table III - Paint Requirements

Property	White	Yellow (lead free)	Black	Test
Pigment: Percent by weight	62.0	62.0	62.0	ASTM D 3723
Total Solids: Percent by weight, minimum	77.0	77.0	77.0	ASTM D 2205
Nonvolatile vehicle: Percent by weight vehicle, minimum*	40.0	40.0	40.0	ASTM D 2205
Viscosity, KU @ 77 degrees F	80 – 95	80 - 95	80 - 95	ASTM D 562
Volatile Organic Content (VOC): lbs/gal, maximum	1.25	1.25	1.25	ASTM D 3960
Titanium Dioxide Content, lbs/gal	1.0 min	0.2 max	N/A	ASTM D 5381
Directional Reflectance : Minimum	92.0	50.0	N/A	ASTM E 1347
Dry Opacity: Minimum (5 mils wet)	0.95	0.95	N/A	ASTM D 2805

* The binder shall be 100 percent acrylic, a minimum of 40 percent, by weight, as determined by infrared analysis and other chemical analysis available to UDOT (ASTM D 2205). Consisting of either Rohm and Haas Fastrack HD- 21A or Dow DT-400NA.

B. Additional requirements:
   1. Free of lead, chromium, or other related heavy metals ASTM D 5381.
   2. ASTM D 2743, ASTM D 4451 and ASTM D 5381: Tests used to verify paint samples meet Accepted Products Listing.

2.3 GLASS SPHERE (BEADS) USED IN PAVEMENT MARKING PAINT

A. Specific Properties: Meet AASHTO M 247 with the following exceptions.
   1. Gradation:

Passing a No. 14 sieve, percent	95 - 100
Passing a No. 16 sieve, percent	80 - 95
Passing a No. 18 sieve, percent	10 - 40
Passing a No. 20 sieve, percent	0 - 5
Passing a No. 25 sieve, percent	0 - 2

   2. Beads having a Silane adhesion coating.
   3. Roundness - The glass beads will have a minimum of 80 percent true spheres.

B. Beads used in Temporary Pavement Markings meet AASHTO M 247 Type II uniform gradation.

PART 3 EXECUTION

3.1 PREPARATION

A. Line Control.
   1. Establish control points at 100 ft intervals on tangent and at 50 ft intervals on curves.
   2. Maintain the line within 2 inches of the established control points and mark the roadway between control points as needed.
      a. Remove paint that is not placed within tolerance of the established control points and replace at no expense to the Department. Refer to article 3.4.
      b. Maintain the line dimension within 10 percent of the width and length dimensions defined in Standard Drawings.

B. Remove dirt, loose aggregate and other foreign material and follow manufacturer’s recommendations for surface preparation.

3.2 APPLICATION

A. Apply Pavement marking paint at the following Wet mil thickness requirements.
1. 20 – 25 wet mils for all markings.

Example Calculation: (Verify wet mil thickness)

$$\text{Wet Mils} = \frac{(0.133681\ ft^3/gal)}{(X\ ft/gal)(Z\ ft)} * 12000\ mil/ft$$

Where,
X = application rate. (Meter readings or dipping tanks).
Z = line width measured in feet.
12000 = conversion from ft to mil
0.133681 = conversion from gallons to cubic feet.

For information only: Approximate application rate for required mil thickness requirements.
1. 4 inch Solid Line: From 190 to 240 ft/gal
2. 4 inch Broken Line: From 760 to 960 ft/gal
3. 8 inch Solid Line: From 95 to 120 ft/gal

B. Refer to Table I for pavement markings that are less than 20 wet mils in thickness.

C. No additional payment for pavement markings placed in excess of 25 wet mils in thickness or exceeding dimensional requirements outlined in Article 3.1 paragraph A.

D. Painted Legends and Symbols 1 gallon per 80 square feet. Provide Engineer calculations of legends and symbols for pay determination.

E. Glass Sphere (Beads): Apply a minimum of 8 lbs/gal of paint, the full length and width of line and pavement markings.
1. Do not apply glass beads to contrast lines (black paint).

F. Begin striping operations no later than 24 hours after ordered by the Engineer.

G. At time of application apply lines and pavement markings only when the air and pavement temperature are:
1. 50 degrees F and rising for Acrylic Water Based Paint.

H. Comply with Traffic Control Drawings.

3.3 CONTRACTOR QUALITY CONTROL

A. Application Rate: Verify that the paint and beads are being applied within specified tolerances prior to striping.

B. Curing: Protect the markings until dry or cured. In the event that the uncured marking is damaged the marking will be reapplied and track marks left on the pavement will be removed at no additional cost to the Department.

3.4 REMOVE PAVEMENT MARKINGS

A. Use one of these removal methods:
   1. Grinding
   2. High pressure water spray
   3. Sand blasting
   4. Shot blasting.

B. Do not eliminate or obscure existing striping, in lieu of removal, by covering with black paint or any other covering material.

C. Use equipment specifically designed for removal of pavement marking material.

END OF SECTION

April 26, 2004

SPECIAL PROVISION

PROJECT #SP-0089(63)310

SECTION 02771M

CURBS, GUTTERS, DRIVEWAYS, PEDESTRIAN ACCESS RAMPS, AND PLOWABLE END SECTIONS

Add the following to Section 02771, Part 2:

2.5 DETECTABLE WARNINGS

A. Detectable Warning Surface – In-line truncated dome pattern that meets the requirements of GW series Standard Drawings. Provide a color that contrasts visually with the adjoining surfaces (either light-on-dark, or dark-on-light). Acceptable products for installation are as follows:

1. Polymer Composite Panel – Vitrified Polymer Composite (VPC), homogenous integral color (UV stable), skid resistant, non-glare finished panel. Use cast-in-place panel for new construction, and surface applied panel for retrofit construction.

2. Precast Concrete Panel – High strength concrete with high tensile stainless steel tendons, homogeneous integral color (UV stable), skid resistant panel. Use for new construction, or retrofit construction.

Delete Paragraph E from Article 3.3, FINISHING CONCRETE.

Add the following to Part 3, Execution:

3.6 DETECTABLE WARNING SURFACE

A. Polymer Composite Panel Installation:

1. Install cast-in-place detectable warning panels directly into the finished plastic concrete surface in accordance with manufacturer recommendations. Provide a smooth transition between the panel and the surrounding concrete surface.

2. Install surface applied detectable warning panels directly on roughened existing concrete surface. Apply manufacturer supplied adhesive in accordance with manufacturers recommendations. Use mechanical fasteners to secure the panel to the existing surface. Caulk a smooth transition bead along beveled panel edge and surrounding concrete surface.

B. Precast Concrete Panel Installation:

1. Place as shown on drawings. Install per manufacturer recommendations for cast-in-place or thin set method. Provide a smooth transition between the panel and the surrounding concrete surface.

Add the following to Part 3.1, Preparation:

I. Concrete Curb & Gutter Type A: Refer to Detail Sheets

J. Concrete Curb and Gutter Transition: Refer to Detail Sheets

END OF SECTION

June 1, 2004

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 02813S

LANDSCAPE RECONSTRUCTION

PART 1 GENERAL

A. SECTION INCLUDES

A. Maintenance and reconstruction of landscaping and irrigation improvements on property parcel acquired for project.

1.2 RELATED SECTIONS

A. Section 0727: Control of Work

B. Section 02312: Grading for Landscapes

C. Section 02812: Pressurized Irrigation Systems

D. Section 02912: Topsoil

E. Section 02922: Seed, Turf Seed, and Turf Sod

PART 2 PRODUCTS

A. Irrigation Conduit and Fittings: Comply with requirements of Section 02812 : Pressurized Irrigation Systems.

1. Piping: Schedule 40 PVC
2. Fittings: Schedule 80 PVC

B. Topsoil: Comply with requirements of Section 02912: Topsoil.

C. Turf Sod: Comply with requirements of Section 02922: Seed, Turf Seed, and Turf Sod.

PART 3 EXECUTION

A. Before commencing work, coordinate location and shutdown of utility lines with utility company and residents. Follow Section 00727: Control of Work.

B. Complete landscaping and irrigation adjustments for Parcel 1 identified on Sheet RW-1 and as further detailed as follows:

1. Reroute irrigation line within right of way taking to permit continued watering during construction period. Adjust sprinkler pipes and sprinkler heads as required to make sprinkler heads fully functional during construction to minimize impact to vegetation.

2. Reconstruct / replace impacted irrigation facilities within parcel area in accordance with Section 02812: Pressurized Irrigation Systems. Ensure that all areas are sufficiently covered by sprinkling system.

3. Prior to placement of sod, restore damaged topsoil to a minimum thickness of 4 inches, in accordance with Section 02912: Topsoil.

4. Replace damaged sod within temporary construction easement in accordance with Section 02922: Seed, Turf Seed, and Turf Sod.

C. Provide a letter of acceptance to the Engineer signed by the Property Owner prior to payment for work complete on parcel.

END OF SECTION

December 17, 2003

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 02892M

TRAFFIC SIGNAL

Add the following to Part 2, Products:

2.18 PRIORITY CONTROL SYSTEM

A. Complete installation of Lehi City supplied materials at SR-89/300 W Signal including the following components:

1. Phase Selector 4 Channel (quantity – 1)
2. Detector – Two Channel, Two Direction (quantity – 1)
3. Detector – 1 Channel, Two Direction (quantity – 2)
4. Detector Cable – (quantity 500 ft)
5. 3 Conductor No. 14 wire **supplied by the Contractor**
6. Confirmation Light Kit (quantity – 3)

Add the following to Part 3, Execution, Paragraph 3.1, Preparation:

G. Coordinate and make necessary connections between traffic signal controller and Union Pacific Railroad signal facilities.

Add the following to Part 3, Execution 3.1:

3.12 INSTALL OPTICOM UNITS

A. Install city furnished Priority Control System per manufacturers recommendations. Contact Dale Ekins, Lehi City Fire Chief (ph 801-768-7130) to coordinate pickup of system components.

October 9, 2003

SPECIAL PROVISION

PROJECT # SP-0089(63)310

SECTION 02969S

OPTIONAL USE OF RECLAIMED ASPHALT PAVEMENT

Delete sections 02968 and 02969 in their entirety and replace with the following:

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Option to incorporate Reclaimed Asphalt Pavement (RAP) materials into hot mix asphalt pavement, dense-graded material only.

1.2 RELATED SECTIONS

A. Section 02741: Hot Mix Asphalt (HMA).

B. Section 02745: Asphalt Materials.

1.3 RERERENCES

A. AASHTO T 164: Quantitative Extraction of Bitumen from Paving Mixtures.

B. AASHTO T 170: Recovery of Asphalt from Solution by Abson Method.

C. AASHTO M 320: Performance Graded Asphalt Binder.

D. Section 509 of the UDOT Minimum Sampling and Testing Guide: Asphalt Binder Quality Management Plan.

E. Section 990: Part 8, UDOT Materials Manual: Hamburg Wheel Track Testing of Compacted Bituminous Mixtures.

1.4 SUBMITTALS

A. Quality Control Plan.

1. Submit the proportion of materials from each of the RAP stockpiles intended to be used in the project.

2. Submit the sampling and testing plan for the project.

3. Provide for testing, by an AMRL accredited laboratory, of the reclaimed material and the total mixture at no additional cost to the Department.

4 Submit to the Engineer for approval.

PART 2 PRODUCTS

2.1 PG BINDER

A. Select and supply a standard AASHTO M 320 PG Binder meeting the requirements of Sections 02745 and 509, in accordance to Table 1.

B. Perform Department Quality Assurance testing on the supplied grade of standard PG Binder in accordance to Section 509.

2.2 MIX DESIGN

A. Obtain Engineer's approval for the use of RAP in the hot mix asphalt.

B. Use up to 30 percent RAP by total weight in the hot mix asphalt, in accordance to Table 1.

C. Provide the following for each RAP Stockpile:
1. Extracted Gradation
2. Asphalt Content
3. SSD Specific Gravity of Extracted RAP

D. Provide the following for the RAP Material combined in proportions for the intended production of HMA:

1. Performance Grade of recovered asphalt binder.
   a. Use AASHTO T 164, Method E, with reagent grade Trichloroethylene, and AASHTO T 170 to recover the asphalt binder.
   b. Determine the performance grade of the recovered binder in accordance to AASHTO M 320 with the following modification:
      (1) PAV aging is not required before testing for fatigue and low temperature cracking.

E. Select the percentage of RAP by total weight in the hot mix asphalt and the standard, virgin asphalt binder grade meeting Section 02745, using Table 1:

Table 1
Binder Selection Guidelines and Total Allowable RAP for RAP Mixtures

Recovered RAP Asphalt Binder Grade	Desired RAP Percent	Recommended Virgin Asphalt Binder Grade
PGXX-22 or lower	< 20 percent	No Change in the Design Grade of the Asphalt Binder
	20 -30 percent	Select Virgin Binder one grade softer than normal (e.g. select a PG64-34 if a PG70-28 is the design grade*
PGXX-16	< 15 percent	No Change in the Design Grade of the Asphalt Binder
	15 - 25 percent	Select Virgin Binder one grade softer than normal (e.g. select a PG64-34 if a PG70-28 is the design grade*
PGXX-10 or higher	< 10 percent	No Change in the Design Grade of the Asphalt Binder
	10 - 15 percent	Select Virgin Binder one grade softer than normal (e.g. select a PG64-34 if a PG70-28 is the design grade*

* Do not select any grades lower than PG XX-34.

F. Meet all the requirements of Section 02741 and the following:
   1. Average wheel impression not to exceed 10 mm in 20,000 passes when tested in accordance with Hamburg Wheel Track Testing of Compacted Bituminous Mixtures, UDOT Materials Manual of Instruction Section 990.

a. Provide to UDOT Central Laboratory sufficient mix to preform test. Allow ten days for results.

2. Meet all the requirements of Aggregate Properties of Section 02741 for the virgin aggregate portion of combined virgin and RAP aggregate.

G. Complete the mix design for the combined virgin and RAP materials following Superpave volumetric mix design procedures. Use an AMRL accredited laboratory for the design.

H. Provide the following for the combined virgin and RAP materials:
1. Gradation
2. Asphalt content
3. RAP content

PART 3 EXECUTION

3.1 RECLAIMED MATERIAL

A. Crush or screen the reclaimed material to be used for recycle to pass a 1-1/2 inch sieve.

1. Construct stockpile platforms in such a way to prevent intrusion of subgrade materials into RAP.
2. Provide adequate drainage for the stockpile site.
3. Use separate cold feed bins for each stockpile.
4. Use screened reclaimed material free of organic materials, soil, or other foreign substances.

END OF SECTION